



University
of Glasgow

Duignan, John (2005) *Undergraduate work placement and academic performance: an investigation into the relationship between learning transfer and the architecture of the internship in a business undergraduate programme.*

PhD thesis

<http://theses.gla.ac.uk/3420/>

Copyright and moral rights for this thesis are retained by the author

A copy can be downloaded for personal non-commercial research or study, without prior permission or charge

This thesis cannot be reproduced or quoted extensively from without first obtaining permission in writing from the Author

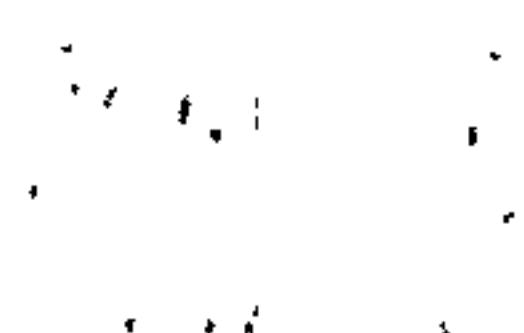
The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the Author

When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given

**Undergraduate Work Placement and Academic Performance: An
Investigation into the Relationship between Learning Transfer and the
Architecture of the Internship in a Business Undergraduate Programme**

by
John Duignan

Submitted in Partial Fulfilment
of the
Requirements for the Degree of
Doctor of Philosophy
The Faculty of Education
University of Glasgow



Acknowledgements

Thanks are due to my supervisor, Dr Geoff Scobie, University of Glasgow for his support, critical comment and suggestions. Thanks are also due to: Ella Kinninmonth (MBE), Jean Beggs and Russell Wardrop of the Paisley Business School Placement Unit, University of Paisley; to Dr Mario Hare of University of Paisley who gave advice on statistical techniques; to the students and staff of the postgraduate seminar group, Faculty of Education, University of Glasgow; to Anne Currie of the Department of Educational Studies, Glasgow University; to David Lush and Steven Gomez who are now working in this area and who have shared their findings and thoughts with me, and whose methodology will shape future research; and to those participants in conferences who gave constructive criticism of early versions of some of the arguments developed in this thesis. Thanks are also due to my wife Margaret and my family, especially Sean who pushed me hard in the latter stages – this thesis is dedicated to them.

Glossary of acronyms employed

ASET	Association for Sandwich Education and Training
BJWE	British Journal of Work Experience
CATS	Credit Accumulation Transfer Scheme
CNAAB	Council for National Academic Awards
CV	Curriculum Vitae
CVCP	Committee of Vice-Chancellors and Principals
DfEE	Department for Education and Employment
FE	Further Education
HC	House of Commons (paper)
HE	Higher Education
HEQC	Higher Education Quality Council
HESA	Higher Education Statistics Agency
HMG	Her Majesty's Government
HMSO	Her Majesty's Stationery Office
HRM	Human Resource Management
IEE	Institution of Electrical Engineers
NCIHE	National Committee of Inquiry into Higher Education
NCWE	National Centre for Work Experience
NHS	National Health Service
MASS	Motivation, Awareness, Skill, Support.
S-R	Stimulus-response
STEP	Shell Technology Enterprise Programme
WACE	World Association for Cooperative Education
WBL	Work-based learning

Abstract

Universities in response to government initiatives, have engaged with the vocationalisation of Higher Education. This has included the extension of placement opportunities in the belief that this will imbue undergraduate teaching with enhanced relevance to the world beyond the university while increasing the employability of graduates. Among a range of claimed benefits for internships, it has been asserted that there will be enhanced academic performance; to date there has been virtually no published empirical evidence on this relationship. This thesis addresses this lacuna. A set of investigations was designed to test for enhanced academic performance post-placement, with differences in the architecture of the placement as intervening variables. It was found that under work environment architecture, there was no significant difference between the academic performance of placement undergraduates on return to academic studies and that of their non-placement peers; under learning environment architecture there was a significant difference between those who had taken placement and their non-placement peers. There was evidence of prior-selection: students who were academically stronger tended to undertake placement. There were indications that in the learning environment architecture, those who had taken an internship did not add value to their academic performance, whereas their non-intern peers did. There was some evidence that academic motivation in the immediate post-internship period was diminished. In accounting for the findings, the processes of transfer of learning are considered as well as sub-issues including the role of contracts and motivation in transfer of learning. Consideration is taken of the implications of the findings for the constituent stakeholder groups. Issues relating to public policy are considered and directions for further research are suggested. The results support the view that internships can be designed to promote academic values and learning; they should not be seen merely as vehicles for promoting the learning of skills and competencies which are not readily produced in the universities.

Table of Contents

Title Page	1
Acknowledgements	2
Glossary of Acronyms Employed	3
Abstract	4
Table of Contents	5
 Part One: Context, Theory and Practice of Work Placement Within Higher Education	 15
 Chapter 1 Introduction: Work Placement and the Nature of Expected Benefits to Undergraduates	 15
1.1 The Scope and Forms of Work Placement Within Higher Education	15
1.2 The Format of Placement as Considered in the Thesis	16
1.3 The Genesis of the Research Questions	16
1.4 The Political Economy of Placement: an Implicit Theory of Learning Transfer	17
1.5 Consensus on Benefits of Placement	18
1.6 Placement and Practical Benefits: Designing for Success – First Steps	19
1.7 Placement and Academic Performance: Intended and Unintended Consequences	20
1.8 Academic Credit for Placement – <i>Employability</i> and What is to be Measured?	21
1.9 Towards an Architecture for Placement: Preliminary Remarks	22
 Chapter 2 The Vocationalisation of Higher Education: The Evolution of an Orthodoxy	 23
2.1 The Evolution of the Placement and Developments in Theories of Learning	23
2.2 Work-based Learning and Higher Education: an Early Evaluation	25
2.3 Knowledge Production and Use: Homogenisation of HE Through Vocationalisation?	26
2.4 Knowledge Modes in HE: the Blurring of a Distinction	27

2.5	Reinforcing an Orthodoxy: Dearing and the Government's Response	28
2.6	Government Policy and the Vocationalisation of Undergraduate Courses	29
2.7	The Evolution of Placement Models and Codification of Best Practice	30
Chapter 3	Transfer of Learning, Work Based Learning and Placement	32
3.1	The Kernel of the Research Question – Seeking Transfer of Learning	32
3.2	In Search of Work Based Learning	33
3.3	Vocationalisation and WBL	34
3.4	WBL, Placement and Transfer of Learning: Structure and Attitudes	35
3.5	Placement and Academic Benefits	37
3.6	Effective Placement Planning and Management: Failed Opportunities	38
3.7	Changing Forms of Knowledge and Asymmetrical Transfer of Learning	39
3.8	Improving Placement Arrangements: the Primary Elements of an Architecture for Transfer of Learning	40
3.9	The Place of WBL in the Production and Use of Knowledge	40
3.10	Models of Placement: <i>Work Environment</i> and <i>Learning Environment</i> Architecture	41
3.11	The Work Environment Placement	42
3.12	The Learning Environment Placement	42
3.13	Functionality and Performance: Opportunities for Testing	43
Chapter 4	Explaining Learning Behaviour	44
4.1	Introduction	44
4.2	Behaviourist Theory of Learning	45
4.3	Problems With the Behaviourist Approach	46
4.4	Cognitive Approaches to Learning	48
4.5	Cognitive Learning Theory: Basic Processes	48
4.6	Stratification of Cognitive Learning	50
4.7	Learning Strategies: in Defence of Surface Learners	51
4.8	Learning Orientations	52
4.9	Deep and Surface Learning Further Considered	53

4.10	Hybrid Learning – Inducing Deep Learning?	54
4.11	Institutional Factors in Learning and Coping Strategies	55
4.12	The Institutional Context of WBL – the Host Learning Ethos	56
4.13	The Context for Learning: Designing for Transfer	57
4.14	Academic Learning and WBL: Deep Versus Surface?	59
4.15	WBL, Placement and Experiential Learning	60
4.16	Kolb’s Theory of Experiential Learning	62
4.17	Kolb’s Learning Cycle and Professional Development	64
4.18	Problems With the Kolb Model of Experiential Learning	65
4.19	Theoretical Approaches to Learning: Concluding Remarks	66
Chapter 5	Transfer of Learning	69
5.1	Transfer of Learning: Introductory Remarks	69
5.2	Transfer of Learning: Behaviourist Tradition in <i>Near Transfer</i>	69
5.3	Transfer of Learning: Cognitive Inroads into Training	70
5.4	The Sign of Transfer	72
5.5	Characterising the Transfer Problem	72
5.6	Characterising Transfer from the Placement Domain to the Academic	74
5.7	Training for Transfer of Learning	74
5.8	The Conditions for Transfer of Learning: Positive and Negative Transfer	75
5.9	Basic Principles of Transfer of Learning	76
5.10	Transfer of Learning Between Distinctive Domains: Restating the Problem	78
5.11	Transfer of Learning and Placement: Asymmetrical Expectations	78
5.12	Some Evidence on Transfer of Learning	79
5.13	Training for Transfer: Short or Long Term Transfer of Learning?	81
5.14	Models of Learning and Transfer of Learning: Characterising the Problem	82
5.15	Learning in the Workplace: Behavioural Theories and Skill Acquisition	82
5.16	Cognitive Theories and Higher Task Performance	83
5.17	Skill Acquisition and Learning – Beyond Surface Learning and Near Transfer	84
5.18	Types of Learning, Skill Acquisition and Instructional Design	85

5.19	Taxonomies of Skill Performance and Learning Strategies	86
5.20	Learning Transfer: Task Specific or Strategic Knowledge?	88
5.21	Forms of Transfer and Intentional Transfer of Learning	88
5.22	Professional Action and Workplace Learning: What Kind of Learning?	89
5.23	Training for Transfer: Cornford's (2002) Model	91
5.24	Vocationalisation and Training for Transfer	93
5.25	Training for Transfer: Yelon's (1992) MASS Model	93
5.26	Study Abroad and Transfer of Learning: Placement by Another Name or a Special Case?	96
5.27	Transfer of Learning: Summary	98
Chapter 6	Motivation, Placement and Performance	101
6.1	Motivation and Placement: Introduction	101
6.2	Definitions and Sources of Motivation – Observing the Unobservable	102
6.3	Theories of Motivation	103
6.4	Motivation, Placement and Performance	105
6.5	Motivation, Placement and Performance: Student Expectations	106
6.6	Motivation: the Workplace and the Academic Domain	107
6.7	Motivation and Expectations	108
6.8	Motivation and Transfer of Learning	109
6.9	The Nature and Development of Student Motivation	110
6.10	Motivation, Transfer of Learning and Placement: Summary	111
Chapter 7	Contracts, Placement and Learning Transfer	113
7.1	Introduction: Contracts, Learning Transfer and Placement	113
7.2	The Nature and Role of Contracts: the Individual and the Organisation	114
7.3	The Operating Principles of Contracts	114
7.4	Contracts as Psychological Drivers	115
7.5	The Psychology of Contracts: the Organisation and the Individual	117
7.6	Thinking Contractually	118
7.7	Drawing Together the Theory of Contracts and Promise-keeping	120

7.8	Contracts and Learning	121
7.9	Contracts, WBL and Transfer of Learning	122
7.10	Contracts and Placement: Roots of Confusion	123
7.11	Contracts and Approaches to Learning	123
7.12	Contracts in Placement: the Placement Student and Misperceptions of Obligations	124
7.13	Contracts and Optimising the Benefits of Placement: Summary	125
Chapter 8 Placement and Academic Performance: Deriving Testable Hypotheses		126
8.1	Placement and the Set of Expected Benefits Accruing to the Undergraduate	126
8.2	Theories of Learning Transfer and the Architecture of Placement	126
8.3	Work Placement, Academic Performance and Testable Hypotheses	127
Part Two: Methods, Data Sources, Procedures and Results		128
Chapter 9 Hypotheses, Methods and Procedures		128
9.1	The Hypotheses to be Tested	128
9.2	Methods: Identifying the Problem	128
9.3	Methods: Experimental Design Characteristics	129
9.4	The Choice of Performance Measurement	130
9.5	Testing for Differences: Selecting the Test Statistic	130
9.6	The Underpinning Rationale of the Investigation	131
9.7	Some Methodological Objections to the Research Design	132
9.8	Reconfiguring the Architecture of Placement: an Empirical Investigation	139
9.9	Characterising the Architecture of Placement	139
9.10	Procedures	139
Chapter 10 The Selection and Application of the Test Statistic, and the Presentation of Results		141
10.1	Methodological Issues Relating to Choice of Test Statistic	141
10.2	Diagnostic Statistics and Choice of Test Statistic	142

	10
10.3 The Sequence of Procedures	143
10.4 Descriptive and Inferential Statistics: <i>Work Environment</i> Architecture	144
10.5 Narrative on <i>Work Environment</i> Results	147
10.6 Descriptive and Inferential Statistics: <i>Learning Environment</i> Architecture	147
10.7 Narrative on <i>Learning Environment</i> Results	150
10.8 Descriptive and Inferential Statistics: Inter-semester Performance, <i>Learning Environment</i> Architecture	151
10.9 Narrative on Inter-semester Performance, <i>Learning Environment</i> , Placed and Unplaced, Year 3	152
10.10 Summary of Results: General	153
10.11 Summary of Results in Relation to the Hypotheses	153
Part Three: Discussion, Conclusions and Recommendations	155
Chapter 11 Discussion of Results	155
11.1 Introduction: Towards Explaining the Findings	155
11.2 <i>Work Environment</i> Architecture: Statistical Findings	155
11.3 <i>Learning Environment</i> Architecture: Statistical Findings	156
11.4 Discriminating Between <i>Work Environment</i> and <i>Learning Environment</i> Outcomes	157
11.5 Towards Explaining the Findings (1): Narrative of the Environmental Effects	158
11.6 Towards Explaining the Findings (2): Failure of Transfer	159
11.7 Summary: Placement and Performance – Architecture or Motivation?	179
11.8 The Internship and Net Transfer of Learning: Some General Considerations	181
11.9 Results Discussion: Summary	186
Chapter 12 Conclusions and Recommendations	188
12.1 Preliminary Remarks	188
12.2 Contributions to Knowledge	188
12.3 Further Research Directions	192
12.4 Policy Proposal: Academic Credit for Placement	196

	11
12.5 Issues of Policy for Stakeholders	200
12.6 Limitations of the Study and Future Research Direction	204
12.7 Conclusion: Tentative Propositions	210
Part Four: Appendices and References	213
Appendices	213
Note on the presentation of appendices	213
Appendix 1 <i>How universities gain from work experience</i>	214
Appendix 2 National Centre for Work Experience	216
Appendix 3 World Association for Cooperative Education	227
Appendix 4 Shell Technology Enterprise Programme (STEP)	230
Appendix 5 <i>CVCP calls on employers to boost work experience</i>	231
Appendix 6 <i>Radical Changes will prepare Higher Education for the 21st Century</i>	233
Appendix 7 Association for Education and Training (ASET)	236
Appendix 8 Example of a WBL undergraduate programme	237
Appendix 9 Changes to the architecture of the placement programmes in the study	241
Appendix 10A Diagnostic procedures and results for selection of main test statistic, with additional results of applying the alternative parametric test.	244
Appendix 11 Questionnaire sent to placement students	261
Appendix 12 Responses to questionnaire	267
Appendix 13 Cornford's (1991) <i>Sequential Skill Practice Model</i>	286
Appendix 14 <i>European Framework for Work Experience</i>	288
Appendix 15 <i>SME Placement Toolkit</i>	289
References	290
Note on presentation of references/bibliography	290
All references list	290
Books cited	303

	12
Journal articles cited	307
Research and conference (proceedings) papers cited	313
Government and quasi-governmental publications and reports cited	314
Web-sourced material cited	316
Software used	317
 List of figures	
Fig 4.1 Learning orientations	53
Fig 4.2 Kolb's learning cycle	63
Fig 5.1 Categories of learned capabilities	85
Fig 7.1 Contract types	117
Fig 11.1 Shared and distinguishing academic features of both placement architectures	158
Fig A1 Cumulative frequencies Year 2 Placed, work environment	245
Fig A2 Cumulative frequencies Year 2 Unplaced, work environment	246
Fig A3 Cumulative frequencies Year 3 Placed, work environment	247
Fig A4 Cumulative frequencies Year 3 Unplaced, work environment	248
Fig A5 Cumulative frequencies Year 2 Placed, learning environment	249
Fig A6 Cumulative frequencies Year 2 Unplaced, learning environment	250
Fig A7 Cumulative frequencies Year 3 Placed, learning environment	251
Fig A8 Cumulative frequencies Year 3 Unplaced, learning environment	252
Fig A9 Cumulative Frequencies Semester 1, Year 3 Placed, learning environment	253
Fig A10 Cumulative Frequencies Semester 2, Year 3 Placed, learning environment	254
Fig A11 Cumulative Frequencies Semester 1, Year 3 Unplaced, learning environment	255
Fig A12 Cumulative Frequencies Semester 2, Year 3 Unplaced, learning environment	256

List of tables

Table A6 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 2 Unplaced, learning environment	142
Table A8 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 3 Unplaced, learning environment	142
Table A10 Kolmogorov-Smirnov test, Semester 2, Year 3 Placed: learning environment	143
Table 10.4.1 Descriptive statistics: Year 2 (pre-placement): work environment	144
Table 10.4.2 U-Test (Mann-Whitney): Year 2 (pre-placement): work environment	144
Table 10.4.3 Descriptive statistics Year 3 (post-placement): work environment	145
Table 10.4.4 U-Test (Mann-Whitney): Year 3 (post-placement): work environment	145
Table 10.4.5 Descriptive statistics Years 2 & 3 (intra-cohort differences) work environment	145
Table 10.4.6 U-Test (Mann-Whitney): Years 2 & 3 Placed: work environment	146
Table 10.4.7 U-Test (Mann-Whitney): Years 2 & 3 Unplaced: work environment	146
Table 10.6.1 Descriptive statistics Year 2 (pre-placement): learning environment	148
Table 10.6.2 U-Test (Mann-Whitney) Year 2 Placed and Unplaced: learning environment	148
Table 10.6.3 Descriptive statistics Year 3 (post-placement): learning environment	148
Table 10.6.4 U-Test (Mann-Whitney) Year 3 Placed & Unplaced: learning environment	149
Table 10.6.5 Descriptive statistics Years 2 & 3 (intra-cohort differences): learning environment	149
Table 10.6.6 U-Test (Mann-Whitney) Intra-cohort differences, Years 2 & 3 Placed: learning environment	149
Table 10.6.7 U-Test (Mann-Whitney) intra-cohort differences, Years 2& 3 Unplaced: learning environment	150
Table 10.8.1 Descriptive statistics, inter-semester Year 3 Placed: learning environment	151
Table 10.8.2 U-Test (Mann-Whitney), Inter-Semester differences, Year 3 Placed: learning environment	151
Table 10.8.3 Descriptive statistics, inter-semester Year 3 Unplaced: learning environment	152
Table 10.8.4 U-Test (Mann-Whitney), Inter-Semester differences, Year 3 Unplaced: learning environment	152
Table A1 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 2 Placed, work environment.	246
Table A2 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 2 Unplaced, work environment.	247
Table A3 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 3 Placed, work environment.	248
Table A4 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 3 Unplaced, work environment	249
Table A5 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 2 Placed, learning environment	250

Table A6	Kolmogorov-Smirnov test for Normal Distribution of data set: Year 2 Unplaced, learning environment	251
Table A7	Kolmogorov-Smirnov test for Normal Distribution of data set: Year 3 Placed, learning environment	252
Table A8	Kolmogorov-Smirnov test for Normal Distribution of data set: Year 3 Unplaced, learning environment	253
Table A9	Kolmogorov-Smirnov test, Semester 1, Year 3 Placed: learning environment	254
Table A10	Kolmogorov-Smirnov test, Semester 2, Year 3 Placed: learning environment	255
Table A11	Kolmogorov-Smirnov test, Semester 1, Year 3 Unplaced: learning environment	256
Table A12	Kolmogorov-Smirnov test, Semester 2, Year 3 Unplaced: learning environment	257
Table 10.4.1A	Descriptive statistics: Year 2 (pre-placement): <i>work environment</i>	258
Table 10.4.3A	Descriptive statistics Year 3 (post-placement): <i>work environment</i>	258
Table 10.4.5A	Descriptive statistics Years 2 & 3 (intra-cohort differences) <i>work environment</i>	258
Table 10.6.1A	Descriptive statistics Year 2 (pre-placement): <i>learning environment</i>	259
Table 10.6.3A	Descriptive statistics Year 3 (post-placement): <i>learning environment</i>	259
Table 10.6.5A	Descriptive statistics Years 2 & 3 (intra-cohort differences): <i>learning environment</i>	259
Table 10.8.1A	Descriptive statistics, inter-semester Year 3 Placed, <i>learning environment</i>	260
Table 10.8.3A	Descriptive statistics, inter-semester Year 3 Unplaced, <i>learning environment</i>	260

Part One: Context, Theory and Practice of Work Placement Within Higher Education

Chapter 1 Introduction: Work Placement and the Nature of Expected Benefits to Undergraduates

1.1 The Scope and Forms of Work Placement Within Higher Education

The term *placement* (or *practicum*, or increasingly in the literature, *internship* or *cooperative education*) in Higher Education (HE) covers a variety of undergraduate experiences including: extended placements that are an integral component of the course programme, in which the placement comes in blocks of six months or one year (designated *Sandwich* degrees); work experiences which are short (between one and six weeks); and those taken during vacation times or part-time work during the teaching terms. According to Harvey, Geall and Moon (1998), in the United Kingdom (UK) this range can be usefully categorised as follows:

- i. Undergraduate work experience as an integrated part of a programme of study which would include conventional *sandwich* degrees of either two six-month blocks (*thin sandwich*) or one period of twelve months (*thick sandwich*), and those which offer professional practice, such as teacher-training programmes and nursing.
- ii. Work experience which is external to the programme of study and may include structured vacation-time work such as that offered under the Shell Technology Enterprise Programme (STEP – see Appendix 4), or work-shadowing.
- iii. Ad hoc work experience external to the programme of study, including part-time work during term-time, voluntary work and most other types of vocational work which have no formal relationship to the programmes of study.

In the UK at the time of writing (2004) there are 1.32 million full time undergraduates in HE (<http://www.statistics.gov.uk/STATBASE/ssdataset.asp>) of which 125,170 are enrolled on *sandwich* programmes, with 24,185 on placement (HESA, 2004). There are recent

indications that the numbers electing to take internships under *sandwich* programmes is declining (HESA, 2004).

1.2 The Format of Placement as Considered in the Thesis

The placement subject matter of this thesis is a sub-set of category (i) above – namely, full-time undergraduates undertaking one twelve-month period of placement as part of their programme of study, in which successful completion of the placement and subsequent success in degree finals will lead to the provision of *sandwich* in the award title. The cohorts studied were on a set of undergraduate business programmes at a UK university; the placement was a discretionary element of the programme; the placement was undertaken on the completion of Year Two; the university placement unit acted as a proactive clearing house for placement opportunities with the ultimate matching of students to places being the outcome of host and student choices; the placement was salaried; the placement did not carry academic credit. The architecture of the placement changed substantively over time such that different cohorts could be considered to have undertaken internship under different placement models. (See 9.8 and Appendix 10)

1.3 The Genesis of the Research Questions

This candidate has had long-standing experience with issues of undergraduate placement, both as an academic placement tutor (academic supervisor), and as an examiner of undergraduates who have taken work placement or have chosen not to. In addition, during periods as academic Admissions Officer and later as Faculty Marketing Director one strongly promoted sandwich degree programmes to prospective students on the basis that the benefits outweighed those associated with non-vocational degree programmes of similar content. Over time it became apparent that there was an urban mythology about placement students which was not confined to any single HE institution and to which this candidate also subscribed. This mythology can be stated baldly: undergraduates who have completed a year of work placement between academic studies are, *ceteris paribus*, better students than those who have not. This proposition was (and still is) heard at degree level examination boards, at conferences of the main proponents of work placement (placement officers and careers

advisors), and is promoted today by various stakeholder bodies including universities. One can readily think of some reasons why the proposition that placement is associated with “better” students might be true – for example, that on return to studies post-placement, the undergraduates will be on average one year older than their non-placement peers; and that maturity of judgement and of experience will translate into better motivation and application to studies. This would be fine as a working hypothesis. However, this urban mythology in recent years has assumed a stronger form than the maturity argument. Instead the proposition is that not only are those who have undertaken an internship better students than those who elected not to do so, but their “advantage” in the academic sphere is directly related to – caused by – the internship. This is much more than any maturity proposition: it is implicitly a theory of learning. When this candidate looked deeper at this proposition, one was struck by three features: an almost complete lack of published studies on the relationship between work placement and academic performance; the uncritical acceptance of the general proposition by most stakeholders in sandwich provision; and the fact that government and universities have been promoting increasingly this mode of study (as part of the vocationalisation agenda of HE) since at least 1997. It is this confluence of observations from which this thesis has emerged.

1.4 The Political Economy of Placement: An Implicit Theory of Learning Transfer

In 1997 The National Committee of Inquiry into Higher Education (NCIHE, 1997 – also known as the *Dearing Report*) argued forcibly that universities should increase the provision of opportunities for students to undertake work-based learning (WBL) as part of their programme of studies. This proposal was embraced by government policy (HMG, 1998) and the universities collectively accepted that a starting point should be the introduction of key skills modules and curriculum developments that would embed these into programme provision (CVCP, 1998, 1999; Jones and Little, 1998). The embracing of such characteristics within the curriculum of the universities is implicitly a statement not only about the political economy of HE, but also about the assumptions of the theory of learning which is to underpin the placement relationship between the universities, their students and the host organisations which provide placement opportunities. In effect the placement is to be a nexus

for a particular form of *transfer of learning* (“*how knowledge acquired in one situation applies (or fails to apply) in other situations*” Singley & Anderson, 1989, p1). Transfer of learning, it will be found later in this thesis (Chapter 5), is a process which is much more complex than might be anticipated, and is, perhaps paradoxically, less well understood than might be expected in the HE sector (Cornford, 2002).

1.5 Consensus on Benefits of Placement

While the theory of transfer of learning has not been made explicit by those who advocate increased vocationalisation of HE, the expansion of opportunities for placement is expected to imbue university teaching with relevance while at the same time increasing the employability of graduates (Policy Works / Scottish Foundation Council, 2003).

Employability has long been part of the broad consensus among key stakeholders in placement, on the range of benefits of placement likely to accrue to the student (see for example, Harvey, Moon & Geall, 1998, NCWE, 2000; for a European dimension on employability see Brennan, 2004). This consensus has tended to emphasise a pragmatic approach to benefits rather than an approach which has an epistemological core underpinned by empirical studies. The practical benefits accruing to the student from placement and for which there has been a general consensus typically include opportunities to:

- i. Apply knowledge in a commercial environment while developing core competencies
- ii. Become familiar with professional practices
- iii. Raise graduate labour-market value
- iv. Develop workplace maturity.

(Daresh, 1990; Ryan, Toohey and Hughes, 1996; Dearing, 1997; Harvey, Moon & Geall, 1998; NCWE, 2000).

In addition to the above benefits, students’ expectations regarding placement include the immediate material gains from being paid for placement as well as future gains from being able to enter their work experience on their curriculum vitae (the latter contributing to the *employability* desideratum of HE - for example, Knight and Yorke, 2002, 2004; Harvey, Locke and Moray, 2004, Bowers-Brown and Harvey, 2004). Moreover, with the increased

emphasis on transferable skills and employability among graduates, and with undergraduates being seen as customers who are purchasing an investment through the medium of a degree programme, it is argued that the acquisition of these attributes will be enhanced by a successful period of placement:

“Since the introduction of tuition fees and the phasing out of the maintenance grant, undergraduate students are now paying customers, who demand from the Higher Education system not only a solid academic education, but also a tangible reward on their investment in terms of increased employability. Work placements are one of the most effective ways of achieving this, while broadening and enhancing the experience of higher education.” (NCWE, 2000, p5)

Bowes and Harvey (1999) in researching first destination statistics found that graduates who undertook a sandwich placement were more likely to secure full-time paid employment within six months of graduating than graduates from non-sandwich courses. However other findings were more ambivalent in terms of the benefits of placement: more non-sandwich graduates continued with their studies than did sandwich graduates; the percentage of unemployed graduates was similar irrespective of undergraduate work-experience; and these broad trends were reflected across different disciplines, with the extent to which sandwich graduates were advantaged varying between subjects.

1.6 Placement and Practical Benefits: Designing for Success – First Steps

Bourner and Ellerker (1993) argue that if the wide range of potential benefits of placement are to be realised then institutional arrangements have to be framed such that the starting point of all placements is that the stakeholders – the universities, the students and the hosts – share a clear vision of what can be and should be achieved through placement; and that they explicitly recognise (with a view to addressing them) the range of constraints on learning which will be experienced by the student during the placement. This latter aspect alludes to, among other things, recognition that the placement cannot be viewed unambiguously as purely a learning experience: the student in placement will also be a member of the workforce and share the obligations and goals of their co-workers, and there will be many occasions where the exigencies of commercial and other processes will relegate formal learning to a secondary role. Given the realities that confront the student in the workplace,

and given that some of these will be powerful constraints on learning, then in order to prepare the ground for successful outcomes from the placement, universities need to design, plan and manage the placement and specifically target:

- i. The relationship between the placement and the learning outcomes of the course as a whole.
- ii. The structure and position of the placement within a course.
- iii. The underlying processes operating within the placement environment (Bourner and Ellerker, 1993; Harvey, Moon & Geall, 1998).

In Chapter 3 (3.8) and Chapter 4 (4.13) the above points will be re-considered in relation to the framing of an architecture for placement which might enhance the potential of the internship to impact positively upon undergraduate academic performance when they return to formal studies.

1.7 Placement and Academic Performance: Intended and Unintended Consequences

While the *raison d'être* of placement historically has been the package of benefits alluded to in section 1.5 above, the enhancement of academic performance has never been central to the commonly articulated purposes of placement; it being seen rather as a largely unexplored potential benefit, with few attempts at providing an evidence base. However the potential for positive learning transfer from the WBL domain to the academic domain continues to be alluded to in the generic literature. For example:

“Work placements can complement and enhance the academic programme carried out at the university Students can mature and develop the key skills while on placements which make them better learners and contributors in the academic environment.” (NCWE, 2000, p7)

Another set of claims drawn from the university sector goes further in implying that there will be enhanced academic performance for the student who has undergone placement, listing among other claims:

- i. Greater motivation by students in their final year.

- ii. Improved performance by students as they apply skills learned in placement to later course material, e.g. project work or team tasks.
- iii. Enhanced teaching as students return with more in-depth knowledge of the subject area.
- iv. Contributes significantly to a student-centred approach to learning. (2004, <http://www.uwic.ac.uk/uwicnet/studserv/workplacement/whatdoestheuniversitygainfromworkexperience.htm>) (See Appendix 1)

Notwithstanding the above noted assertions, one acknowledges that the enhancement of academic performance has never been central to the claims made for placement, and this is perhaps reflected in the paucity of published studies in this particular area. An early study into the effectiveness of the sandwich component of Business Studies degrees, (Daniel and Pugh, 1975) suggested that academic benefits were largely unrealised through the placement. It is the issue which is at the heart of the thesis and which will be examined in greater depth at a later stage.

1.8 Academic Credit for Placement – *Employability* and What is to be Measured?

As universities strive to be “more relevant” (defined as producing the quality of *employability* in their graduates), they are faced with the dilemma of reconciling traditional academic standards and values – and the traditional means of measuring these - with those of the world outside the universities: that of commerce, industry and public service. One means of bridging this perceived discontinuity of learning experience is precisely through the placement, and in particular by means of reconfiguring the practicum in order to give full academic credit for placement (Danks and King, 1986, Benett, 1989, Marshall, 1993, Barthorpe & Hall, 2000, Marshall and Cooper, 2001, Harvey, Locke and Moray, 2004). The promoters of this approach argue that, properly conceived, it will have the merit of reinforcing the critical-analytical values taught in the classroom, laboratory and workshop, while marrying them to the expectations of the worlds of commerce, industry and public administration. Thus, ideally, the perceived gap between the university learning structures and those of the workplace learning structures will narrow until it becomes insignificant; in which case the real benefits of placement will include enhanced academic achievement, as well as all the others for which there is general consensus. Moreover, from an

epistemological perspective, full academic credit for placement would contribute to the ongoing debate in learning theory. This of course raises the problem of how to evaluate placement within the framework of conventional measures of academic achievement (Marshall and Cooper, 2001), an issue which can only be touched on in this thesis. If placement does not lead to enhanced academic performance despite the care and attention devoted to the architecture, then ultimately a larger question looms over what it is that conventional definitions of academic achievement are measuring, with concomitant questions for the methods employed for its evaluation.

1.9 Towards an Architecture for Placement: Preliminary Remarks

The issue of full academic credit for placement within an environment which anticipates increased participation in vocational learning by undergraduates in HE, will require a radical rethink as to the goals and structures of the practicum (Benett, 1989, Marshall and Cooper, 2001). While the form placement takes may vary from institution to institution, and by course of studies, it is likely that a template (or set of templates) for the optimum placement structure will emerge. To arrive at such a template will require the answers to a number of questions, among which will be:

- i. What should be the agreed learning goals and outcomes best achieved through the practicum?
- ii. To what extent should there be a formal curriculum or program of studies for the practicum?
- iii. To what extent should it be structured around learning contracts?
- iv. What will be the role of supervision and who will undertake this?
- v. What should be the length and structure of the practicum?
- vi. Can co-curriculum activities (seminars on workplace experiences etc) increase the educational outcomes of the experience?
- vii. How should the effectiveness of the placement ultimately be measured?

In Part Three of this work these questions will be revisited in the light of the theoretical and other literature reviewed in Part One, and in the light of the results reported in Part Two.

Chapter 2 The Vocationalisation of Higher Education: The Evolution of an Orthodoxy

2.1 The Evolution of the Placement and Developments in Theories of Learning

Higher Education programmes of study which include a significant component of work placement have been provided in the UK since the 1950s (Brennan and Little, 1996). Known as *Sandwich Degrees*, they were pioneered in engineering and technology and validated by the National Council for Technological Awards from 1955. Initially they were almost exclusively the preserve of non-university providers of higher education: namely the polytechnics in England and Wales and the central institutions in Scotland. Over time the number and range of these courses expanded and diversified beyond engineering and technology, in particular to encompass the growth in business studies programmes into and beyond the 1960s. From the recommendations of the National Advisory Council on Education for Industry and Commerce (1964 - also known as *the Crick Report*) sandwich degrees were placed within the remit of the Council for National Academic Awards (CNAA) which evaluated syllabi, facilities and staffing of non-university HE institutions – effectively the polytechnics in England and Wales and the Central Institutions in Scotland – all of which applied to it for permission to run CNAA approved programmes (Daniel and Pugh, 1975, Brennan, 1987). Over time the definition of a sandwich degree evolved and became more prescriptive: by 1988 *the placement* was referred to as a period of supervised work experience which had to include, among other things, specified objectives for the placement and assessment of the student's performance in the workplace (Brennan and Little, 1996). These developments can be understood in terms of a synthesis between the practical objectives of the placement with emerging theories of work based learning on the one hand (for example, Levy et al, 1989), and theoretical treatments of the modes of learning on the other (for example the distinction between *Mode One* and *Mode Two* learning, (Gibbons et al 1994; Scott, 1995). Apart from the increased provision by the universities of placement opportunities in its many forms, evidence for this convergence of purpose and theory is provided by the increased incidence in the sector of:

- i. Credit rating of in-company courses with respect to CATS points (Osborne et al, 1993).

- ii. The increasing emphasis and provision by the universities of modules delivering “core competencies” and “employability skills” (CVCP, 1998) which are integrated into the formal curriculum for assessment purposes.
- iii. The increased provision of full academic credit for placement (NCWE, 1999, Marshall & Cooper, 2001)

The association between placement and employability skills is evidenced by the fact that work placement, in whatever form – but especially under the extended sandwich programme – is regarded as representing the mode of delivering employability skills that is most often used by the universities, where these skills are defined as: *“traditional intellectual skills; the “new” core or key skills; personal attributes deemed to have market value; knowledge about how organisations work and how people in them do their jobs.* (CVCP, 1998, p3). This approach can be compared with the “key skills” as defined in Dearing’s (1997) terms as: *communications skills, numeracy, the use of information technology and learning how to learn* (Dearing, 1997, CVCP, 1998, 1999 – see also Appendix 5). However, innovation in the provision of placements that goes beyond the sandwich format or other types of work-based learning opportunities, has met with some resistance from employers who are sometimes seen as regarding placement as a means of the future recruitment of graduates (CVCP, 1998), rather than providing effective WBL as is their primary purpose from the perspective of the placing institutions. Notwithstanding the above noted developments or spin-offs from placement and the caveat on how some employers might have an ancillary purpose in engaging with it, the placement in its thin or thick sandwich modes continues to represent one of the major points of contact between many universities and the world of work; as such it is incumbent upon the promoters of such opportunities to undergraduates to assess the impact of this mode of contact on the universities’ central role in terms of the production and dissemination of knowledge. In the rest of this chapter this issue of knowledge production will be considered in terms which will distinguish initially between the delivery of the product in the two distinctive domains of the formal academic setting of the university and in that of the workplace. In turn this will lead naturally to discussion of transfer of learning, which will be treated in Chapter 5 since it is at the heart of the research question: whether placement can or should enhance academic performance?

2.2 Work-Based Learning and Higher Education: An Early Evaluation

The quality and principles upon which the early initiatives in HE placement were based, was varied and driven initially by a pragmatic approach to learning rather than on strong theoretical principles relating to WBL or transfer of learning. They were nevertheless subject to some attempts at critical appraisal, most notably by the study on behalf of CNAA conducted by Daniel and Pugh (1975). Examining CNAA regulated degrees in Business Studies the researchers attempted to produce a comprehensive evaluation of the effectiveness of the sandwich component of such degrees. This included:

- i. Ratings of the quality of placements.
- ii. The relevance of the placement to the course of studies.
- iii. The placement activities in themselves.
- iv. The benefits and disadvantages of placements.

Of particular relevance to this thesis, the report also considered the nature of “*the potential of well integrated placements*” (Daniel and Pugh, 1975, p29), among which was that of enhanced academic performance upon return to studies. The authors articulated the assumptions upon which enhanced academic performance might be based as being:

“the student is given the opportunity to bring what he has learned in college to bear on practical problems in industry. When he returns to college this experience enhances his understanding of his formal studies and provides a concrete perspective which makes plain the point of the more abstract content of his course.” (Daniel and Pugh, 1975, p 29)

However, this survey-based study found that the hypothesised positive interaction between college course and placement experiences came bottom of the list of rated benefits of placement by those surveyed: The tone of the findings was generally mixed with the top rated benefit being “*Felt more useful in first job*”; 38% of those surveyed “*saw more point to college course after placement*” while 33% disagreed with this proposition and 29% neither agreed nor disagreed. In the same vein, to the proposition that “*felt more confident in college work after placement*” 33% agreed, 29% disagreed and 38% neither agreed nor disagreed (Daniel and Pugh, 1975, p29). Moreover, the study concluded that “*the ‘parallel’ benefits of placements receive overwhelming support, while the ‘educational’ benefits are more likely to be discounted or to receive lukewarm support.*” (Daniel and Pugh, 1975, p31). On the

potential educational value of placements, the authors' analysis suggests that the fault does not lie in the level of potential itself but rather "*with the extent to which this potential is effectively exploited in practice*" (Daniel and Pugh, 1975, p32). This question of the effective exploitation of the full potential for placement, raises issues already touched upon in this thesis – such as the constraints on learning in the workplace noted in section 1.6 above, and those relating to designing an architecture for placement (1.9 above) – and will be a unifying theme of the dissertation.

2.3 Knowledge Production and Use: Homogenisation of HE Through Vocationalisation?

Government demands for the universities to widen access and increase the vocational content of the programmes they offer bring into sharper relief the historical distinction between the "old universities" (and to an extent the "new-old" universities) on the one hand, and the "new universities" (the former polytechnics of England and Wales and the central institutions of the Scottish system) on the other hand. Moreover, notwithstanding the existence of league tables and the various forms by which self-selecting coalitions of interests within the sector (such as the Russell Group of universities) seek to maintain the distinction between "old" and "new", the HE sector is in at least one sense undergoing a process of homogenisation – that is in respect to embracing vocationalisation of programmes. The aforementioned distinction within the HE sector is sometimes framed in terms of the difference between research-based institutions (the *traditional* universities) and those which are primarily seen as teaching institutions which have long had industrial links (the "new" universities). However this distinction can also be framed in knowledge terms as essentially the distinction between the concept of *pure knowledge* (the search for knowledge for its own sake) as distinct from the knowledge that has been generated or driven by applications – the *utilisation of knowledge*. Alternatively put, it is the distinction between the creation and advancement of theory within the sector on the one hand, and its application beyond the sector on the other hand (Henkel, 1988). The pursuit of pure theory has been seen as the main function of the traditional universities and their disciplines, whereas the new universities have tended to be associated with the application of knowledge and less with the advancement of theory. To a large extent this has been mirrored in the past in differences in specialisation of function; and this

provides a partial explanation for the reluctance on the part of the traditional universities to engage with the philosophy of the sandwich degrees and indeed of their coming only lately to embracing the merits of vocationalisation in general and broad-based placement in particular. With the increased pressure towards vocationalisation of the whole sector, this form of differentiation within HE is likely to become less defining and may in turn have profound consequences for the theory and practice of placement within HE, as critical scrutiny is focused upon practices which have developed over many years and which lack strong theoretical and evidence-based foundations.

2.4 Knowledge Modes in HE: The Blurring of a Distinction

The distinction between pure and applied knowledge noted above as mirroring the historical differences in functional specialisation between the two main groupings of universities, has also been couched in terms of *Mode One* and *Mode Two* knowledge (Gibbons et al 1994; Scott, 1995); while Eraut (1994) refers to differences in terms of *propositional* and *process* knowledge, (the former can be characterised as being “codified” knowledge – publicly available, having wide applicability and being capable of being transmitted through such as formal discipline-based university courses; whereas process knowledge is characterised as consisting of “*knowing how to conduct the various processes that contribute to professional action*” Eraut, 1994, p107). As the HE sector increasingly has to respond to the demands of government policy – and to the extent to which this in turn is reflective of the demands of society, industry and commerce (Lambert, 2003) - then according to Scott (1995), at the level of operations, the distinction becomes even greater. The dynamic for Mode Two knowledge, it is argued, is not mainly in academe, but rather permeates society through culture and, especially as it reflects the dynamics of the marketplace, through economic activity. Moreover, the process has become so dominant within society and culture that the pursuit of applications in turn determines the scientific priorities of society and of the universities therein, leading to the definition of problems worthy of consideration (the research questions) and the acceptability of solutions (Brennan and Little, 1996). As Mode Two knowledge assumes an increasing importance through its role in the transformation of societies and economies with the globalisation of the marketplace and the associated values and cultural shifts, so Mode One knowledge becomes as it were, subsumed by Mode Two

and harnessed to these forces, and the distinction becomes ultimately artificial. Some evidence for this “acquisitional” process of Mode Two in relation to Mode One comes from a series of studies (Boys et al, 1988, Silver and Brennan 1988, HEQC, 1996, CVCP, 1998). Further force has been injected into the process by the government-driven need for universities to address the “employability question”; this has ensured that the bulk of courses provided are based upon discipline-based knowledge (and the implicit research-base of such knowledge production) and they have to address “real world” problems, be they generated by society in the round or by the workings of the marketplace, national and global. In such circumstances the role of universities becomes homogenised, with the differences being in terms of how well the individual institutions perform these tasks. As part of their function, the universities not only will be expected to provide greater opportunities for placement, but will find it a natural consequence of changes in knowledge forms irrespective of their innate historical preferences formed under a previous and increasingly redundant agenda for HE (see for example Lambert, 2003).

2.5 Reinforcing an Orthodoxy: Dearing and the Government’s Response

By rehearsing the familiar set of arguments in favour of increased and generalised university provision of opportunities to undertake placement and engage in WBL as part of their programme of studies, the 1997 National Committee of Inquiry into Higher Education (*Dearing*) was doing little to challenge an orthodoxy which has its roots outside of the traditional university sector, and one which had provided the main *raison d’être* of the new universities in their previous incarnations. In its extension of this philosophy of wider access and increased reliance upon WBL beyond the new universities, the NCIHE provided no substantive critique of the effectiveness of WBL, nor indeed a critical analysis of the underlying assumptions of its promotion of WBL as an appropriate mode for delivering that part of higher education provision which is to lead to increased employability of graduates and enhanced the relevance of university teaching. To a great extent Dearing is a synthesis of the prevailing conventional wisdom which was offered by way of “evidence” from all quarters. Similarly in its response (HMG, 1998) the Government in turn co-sponsored this conventional wisdom and uncritically accepted the recommendations. Thus it became a stated objective of its policy for HE to work with the universities to provide quality work

experience for undergraduates where this is defined as “*temporary employment of a student, usually off campus, within a framework of learning and assessment where the individual student takes control of the learning*” (ASET, 1999 p17). This existing orthodoxy of expectations was further reinforced - on the grounds of setting standards and the dissemination of good practice – by the establishment of the National Centre for Work Experience (NCWE – see Appendix 2) which was charged with among other things, disseminating information on best practice. As for the universities, an impetus to homogenisation was given by the CVCP response (1998; 1999) emphasised that a starting point should be the introduction of “key skills” modules (or *employability skills, transferable skills, core competencies*) by the universities, and arguing that better still would be a line of development in curriculum provision that led to the embedding of these skills into subject provision; thereby explicitly recognising that the universities have to be concerned with graduate employability (Knight and Yorke, 2002; Harvey, Locke and Moray, 2004). However, there is no automatic process in the learning or in the context of learning employability skills in the HE institutions, that will seamlessly transfer these to the employment context of the graduate (Becker, Geer and Strauss, 1961, CVCP, 1998). Moreover, the transfer process, as much as the learning process, will require further investment of resources by the graduate and the employer (Eraut, 1994). By ignoring these powerful resource and pedagogical questions, a largely untested “conventional wisdom” has been promoted throughout the HE sector and an orthodoxy has been reinforced which is largely unsupported by a solid body of theoretical and empirical work. In such circumstances it becomes important to subject the core assumptions of the placement agenda to critical scrutiny. This will be a theme of much of Chapters 5 and 6.

2.6 Government Policy and the Vocationalisation of Undergraduate Courses

As well as the response of Government to Dearing noted above, it has since shown in other developments its commitment to the principles of WBL in the context of HE policy, and its determination to work with universities in relation to increasing the vocational nature of higher education studies by, among other things, the introduction of Foundation Degrees (HMSO, 2003, Cmd 5735, Joshi, 2003, Morgan et al, 2003). In a speech given at Greenwich University on 15 February 2000 (Appendix 6) the then Education and Employment Secretary

David Blunkett, charged the universities with having a special responsibility to establish links with businesses, to meet the imperatives of serving local labour markets, and to provide professional development courses that would stimulate economic and intellectual growth. It was also expected of the universities that they would improve their provision of careers guidance and expand their links with employment, including work experience and work placements (Blunkett, 2000, DfEE). Support for this policy was articulated by the Education and Skills Committee of the House of Commons - Fifth Report (2003) which noted that

“Another key element in the Government’s strategy for collaboration between business and the higher education sector is the development of foundation degrees, one of the main features being that the courses are designed in partnership with employers so that they can ensure that the skills taught meet the employers’ needs.”

(The committee did add a cautionary note: *“We believe that the Government’s linkage of the 50% participation target (for access to HE) to foundation degrees is unwise.”*)

As a measure of the importance attached to this latter development in extending vocationalisation, the government’s target of fifty per cent participation rate in higher education for those aged between 18 and 30 is to be met *“mainly through these two-year work focused foundation degrees”* (HMSO, 2003, Cmd 5735, p 11). Thus it can be seen that since Dearing (1997), much of the thrust of government policy towards HE has been not only the widening of access, but the explicit harnessing of the resources of the sector towards enhancing the relationship with industry, commerce and public service, in which there is little room for doubt as to which sector is serving which. In this environment the opportunities for placement in a range of forms will be surely increased; in which case there is an increased need for understanding the learning and teaching mechanisms which may be involved, no more so than the extent to which there may be transfer of learning between the two domains (see Chapters 5).

2.7 The Evolution of Placement Models and Codification of Best Practice

While there has been a long standing and evolving acceptance of the benefits of placement, there has been no uniform approach to placement and its role in academic assessment and achievement, or in its architecture. There have been some institutional developments external

to the universities that have worked towards establishing best practice in the sector. For example, the *Association for Sandwich Education and Training* (ASET) was established in 1982 with a remit to promote higher education programmes of study which had integrated periods of placement within businesses and other relevant organisations (See Appendix 7). Membership of ASET encompasses universities, businesses and other organisations which have interests in, and involvement with, student employment and work-based learning. As well as its core aim of promoting higher education courses with integrated periods of placement, ASET is involved in disseminating best practice guidelines in work-based learning but also including issues of health and safety for students as employees, and the production of a *Code of Good Practice for Sandwich Placements* (March 2001). Since the creation of NCWE in 1998, the two organisations have increasingly become involved in collaborative activities, the purpose of which is to promote the conditions for the further expansion of opportunities for students in higher education to experience the (largely unchallenged) benefits of work placement which is integral to the programme of (academic) studies. Internationally, the lead organisation is that of the World Association for Cooperative Education (WACE; see Appendix 3). However, notwithstanding these developments and their contribution to practice and debate on placement, there remains a lacuna in terms of placing the principles of internship and WBL on sound theoretical grounds. These and related issues will be dealt with in Chapters 5, 6 and 7.

Chapter 3 Transfer of Learning, Work Based Learning and Placement

3.1 The Kernel of the Research Question: Seeking Transfer of Learning

Any general hypothesis which postulates a relationship between formal academic studies and the placement experience of the undergraduate is implicitly formulating a linkage between these domains of learning which can only be properly understood in terms of a theory (or theories) of *transfer of learning*. The general hypothesis which states that work placement will have an impact upon academic performance post-placement is implying that there will be transfer of learning from the work domain to the academic domain and that this will be, in principle, measurable. However, that such transfer of learning will be measurable by the conventional methods used in the academic domain is another question. With this caveat in mind, in order to reach the crux of the research question it will be necessary to consider in some depth whether there are distinctive features which delineate WBL from that of learning in the academic domain. The alternative proposition, that work based learning and that which takes place in the academic domain are one and the same, does not bear close scrutiny whether it be framed in terms of the earlier noted distinction between Mode One and Mode Two knowledge (see 2.1), or in terms of the practical activities which characterise the main functions within the two domains experienced by the student: in the academic domain the primary function which characterises the university, is the transmission of knowledge (and to a greater or lesser extent the creation of knowledge); in the workplace the primary activity of the student is engagement in the processes which contribute to the goals of the organisation (production in the case of commercially oriented host organisations, and the provision of services in the case of public sector hosts). In the internship while learning will take place – one cannot conceive of the intern not learning something - it will be as a secondary consideration and in some cases (where the placement architecture is informal or loose) it will occur almost incidentally and will be process oriented. Moreover, such learning that takes place in the placement will only coincidentally bear a close relationship to the learning that is intrinsic to the academic domain unless the architecture of the placement is specifically configured to map across these domains. Perhaps more importantly from the perspective of this investigation, there is another crucial differentiating factor: even where

learning takes place in both domains, the methods of measuring such learning are also likely to be different and posited upon different values. Thus it is, that these distinctions in terms of types of learning and issues of measuring learning which colours questions of transfer of learning and lead to two prime questions: under what conditions will transfer of learning take place, and how should one measure it?

3.2 In Search of Work Based Learning

The definition of what constitutes WBL in the context of higher education is in the process of transformation. While the conventional definition would include that part of learning by the undergraduate which is located in the work place during work experience rather than in the university (such as in placement as part of a sandwich degree programme), increasingly there is a reversal of the learning relationship. Universities are becoming more engaged in the provision of learning within the workplace for existing workforces (or parts thereof), in the forms of in-company training and in the provision of customised degree programmes which take their reference point from the workplace requirements. Reflecting this process of change, Boud, Solomon and Symes (2001), attempt to redefine WBL with reference to six distinguishing characteristics:

- i. Partnership between an employer and a university.
- ii. The students negotiate between the two partners.
- iii. The programme of studies is derived from the requirements of the workplace (the employer) and is not a traditional discipline-based programme offered by the university.
- iv. The level at which the student enters the programme is set by their level of competence (and not by some formal admissions criteria).
- v. Learning will have a strong project-orientation and will naturally be concerned with the processes of the workplace (or the market).
- vi. The university assesses and validates the outcomes of the programme of learning.

(Boud, Solomon and Symes, 2001, pp 4-7. For an example of a degree programme based upon a variant of the foregoing see Appendix 9)

While the foregoing is a useful contribution to understanding the rising complexity of WBL in relation to higher education, it would appear to largely exclude much of the current

involvement of universities in WBL in the form of sandwich degree programmes. In terms of the Boud, Solomon and Symes definition, conventional placement arrangements will be covered only by points i.) and ii.) above, insufficient as a starting point for understanding the WBL that is likely to occur under conventional placement arrangements. Moreover, an added complexity is given to the issue by some definitions of WBL which largely preclude, or at least downgrade, the potential for WBL to develop the student qua student – for example, the conventional view of the placement student seen from within the work environment can be summarised thus:

“here the status of the learner is an (SIC) employee in the workforce rather than a student from higher education; and the nature of the learning is concerned predominantly with an ability to do the work rather than with personal development.”
NCWE, 2000, p33)

Taken together then one can postulate that while some WBL will inevitably occur under any placement arrangements including the most informal and unstructured, the task of designing placement architecture is not only to elicit from the placement the optimum amount of learning possible in the circumstances (and subject to the practical constraints of learning in circumstances where learning is not the objective of the main activities undertaken), but also to format the learning in relation to the objectives set by the academic domain. Not only do the objectives set by the academic domain dominate, but their methods of evaluating such learning will also be dominant. Thus one touches upon the issue of what it is that is being evaluated by conventional academic methods of assessment - an issue which will be considered again in the section on academic credit for learning and in the discussion and policy sections of this thesis.

3.3 Vocationalisation and WBL

Recognising the diversity of experiences and potential for introducing learning through increased links with the workplace, universities in their various ways (for example, Barthorpe and Hall, 2000; Gibbs, 2000) have set out to improve provision of careers guidance, links with employers aimed at increasing the provision of opportunities for placements, as well as the introduction and expansion of Foundation Degrees. At the same time the nature and forms of WBL have been changing with traditional forms of sandwich provision of varying lengths being but just one example, while innovation in integrating programmes of study

derived from the workplace rather than from the university are on the increase (Boud, Solomon and Symes, 2001). Other developments have worked towards establishing placement best practice in the sector: for example, the Association for Sandwich Education and Training (ASET) was established in 1982, and the National Council for Work Experience (NCWE) was created as a response to Dearing (1997). A core assumption of such developments is that the benefits of work placement will be optimised when it is integral to the programme of studies; consequently the architecture of placement will be central to exploiting the placement potential. However, in relation to that part of WBL which might impact upon academic performance, there is a need to investigate further the processes involved in WBL and whether these can realistically be expected to transfer from the work domain to the academic domain.

3.4 WBL, Placement and Transfer of Learning: Structure and Attitudes

Heller and Heinemann, (1987), examined differences in attitudes and values of placement students in the broader context of the question of academic achievement being a function of structured and non-structured work placements. They found that the structural characteristics of the placement as a force for learning transfer are modified by the set of attitudes and values brought to the placement by the student. The placement student who, say, is highly motivated towards placement and anticipates academic benefits post-placement, is more likely to exhibit evidence of positive learning transfer in the direction: *placement domain* → *academic domain* than would be the case where there was low enthusiasm towards the placement and where the expectations of academic benefits were not high. The implications were that architecture and well-defined anticipated outcomes from the placement (a function of sound architecture anyway) would be positively correlated with academic benefits post-placement. Such outcomes would have to be realistically set with regards to the constraints on learning in the workplace, otherwise negative transfer of learning becomes an increased possibility. Indeed the corollary of the Heller and Heinemann proposition may also hold: that where a placement has disappointed expectations of the intern, there may be a significant loss of motivation which impacts upon the academic domain on return to studies – an issue which is explicitly dealt with in the investigation of this thesis. Not only are the expectations of the students towards placement a potentially crucial element in regard to achieving positive

transfer: the expectations of academics and indeed of the host or their agents are equally crucial in this regard. Parilla and Hesser (1998) found that while most (USA) sociology degrees offer the opportunity to undertake placements, academics were sceptical of the integrity of experience-based learning, and of its impact on academic achievement; in these circumstances there is an element of self-fulfilling (and negative) expectations, with students not achieving evidence of positive learning transfer from the workplace domain to the academic. The difficult research question in these circumstances is the extent to which this reflects failure to achieve transfer of learning or whether it reflects the subjective marking schema of the academics which has been in part formatted by the scepticism in relation to the scope for positive transfer of learning from WBL to the academic domain? However, on a positive note and reflecting the problem with self-fulfilling expectations, Parilla and Hesser (1998) argue that this problem can be overcome to a significant extent by properly structured placements, and academic attainment post-placement can be enhanced by developing analytical skills pre-placement. In terms of the modern debate and agenda, this would include developing the set of transferable skills mentioned in Chapter 1 above. In addition, the perceived barriers to learning transfer from the placement to the academic arena can be to an extent surmounted by well-designed and implemented placement management (an integral part of the placement architecture). Ryan, Toohey and Hughes, (1996) note that there have been few attempts to quantify the academic impact of placement, nor acknowledgement by key stakeholders that there might be dis-benefits; instead the focus of the general placement literature has led to an almost uncritical consensus on the range of benefits that accompany the internship. There is general agreement (for example, Daresh, 1990; Ryan, Toohey and Hughes, 1996, Dearing, 1997, Bowes and Harvey, 1999), that placement provides a range of benefits for students including the opportunity to:

- i. Apply knowledge in a commercial environment, while developing core competencies.
- ii. Become familiar with professional practices.
- iii. Enhance employment prospects and raise graduate labour-market value.
- iv. Develop workplace maturity.

In addition, and perhaps of increasing importance to the student given the funding regime in (UK) Higher Education provision at the time of writing, the student undertaking placement,

especially under the single extended model (*thick sandwich*), will usually be paid by the host employer. This should not be underestimated both as a motivational driver in the decision to take placement and as a positive environmental factor akin to the institutional factors that can enhance learning (or indeed degrade it –for example: Becker et al, 1961, Ashcroft and Foreman- Peck, 1994). With respect to the impact of changed funding arrangements, it is probably too early to give a definitive account of the likely impact of this upon the take-up rate of placements, however there are emerging indications that the numbers seeking placement of the type central to this thesis are in decline (for example Busby, 2003). Work by this researcher reinforces this picture with the numbers enrolled on traditional sandwich programmes remaining broadly constant between 1997 and 2003 while the numbers electing to take placement have declined from a peak of almost 29,000 to just below 25,000 (HESA, 2004).

3.5 Placement and Academic Benefits

It is sometimes asserted that benefits accrue to academics since “*work experience greatly enhances teaching as students return with improved subject knowledge, understanding and skills.*” (BJWE, 2000). The corollary of this is that there will be enhanced academic performance upon return to studies post-placement. Additionally there are wider benefits for the universities: a corporate image can be promoted of an institution that is “connected to the real world”, with all the advantages that might flow from this perception in terms of recruitment of students and of teaching staff, research funding and commercial consultancy. But it is the former proposition – that there will be enhanced academic performance on return to studies – that is at the core of this investigation, and which is probably, of all the alleged benefits of placement, the least tested and the least understood. At the heart of this research problem there are two aspects to reaching any definitive conclusion: firstly there is the theoretical aspect of learning transfer; and secondly there is the practical aspect which has tended to format the debate on placement until now – basically this is framed in terms of not what does a theory of learning or learning transfer tell us about placement, but rather what are the commonsense or practical aspects of placement arrangements which are likely to lead to beneficial outcomes? To help move towards some insights into these issues consideration will now be taken of the conditions under which learning transfer is unlikely to be significant

between the placement domain and the academic, followed by further considerations of a theoretical nature in relation to the processes of transfer of learning.

3.6 Effective Placement Planning and Management: Failed Opportunities

Such has been the largely uncritical view of placement within the institutions which were most closely associated with its promotion (initially the polytechnics and the central institutions) that this has carried over into the contemporary environment which has seen a broad-based expansion of higher education both in terms of numbers entering the system and in the numbers of universities offering opportunities for work experience as part of programmes of study at degree level. This has been further reinforced by the recommendations of the NCIHE (1997) and their largely uncritical acceptance by Government (1998) and the Universities (CVCP, 1998). Unsurprisingly then, universities engaged in the promotion of placement opportunities do not explicitly acknowledge that there may be negative effects of work placement. Ryan, Toohey and Hughes (1996), note some possibilities in this respect, including:

- i. A lack of success in integrating theory and practice.
- ii. Inappropriate internships.
- iii. The internship might focus on a narrow range of competencies at the expense of a deeper understanding of systems.
- iv. The quality of supervision may be problematic.
- v. Placement experiences may subvert the academic program.

With respect to the above points of potential loss of learning transfer, consider some examples from the literature. Turney (1988) found that student-teacher placement (the classroom environment) undermined confidence in educational theory; Au Yeung et al (1993) observed that engineering students did not believe that their placement helped them integrate theory and practice; while Ryan, Toohey and Hughes (1996) note that while there is widespread acceptance of the value of placement among stakeholders, persistent problems recur in which placements are poorly structured and inappropriately supervised, “*resulting in experiences that may actually undermine learning*” (p370), and “*there must be a close and obvious (particularly to the student) relationship between the theoretical and practical*

components of a course.” (Ryan, Toohey and Hughes, 1996, p362). The corollary of this is that inferior placement experiences can be minimised and benefits maximised by the architecture of the placement being appropriately configured (Parilla and Hesser 1998). This may include increased scope for positive learning transfer from the workplace to the academic domain; in turn this would be reflected in enhanced academic performance upon return to studies post-placement.

3.7 Changing Forms of Knowledge and Asymmetrical Transfer of Learning

Developments in the form in which knowledge is produced in the HE sector over the last two decades as exemplified by the growth in business and management and related programmes of study, (*“the principles and concepts are grounded in the activities of the business world, not in theories formulated in academe; and they are intended for the practical mastery by students of contextualised skills.”* Henkel, 1988, p84), in conjunction with the universities’ acceptance of a mission to promote employability (Gibbons et al 1994; Scott, 1995; Brennan and Little, 1996, Gibbs, 2000), suggest that in terms of activities which give rise to learning, the match between the work domain and that of the academic has been growing ever closer. In these circumstances there should be an increased goodness-of-fit between the demands of the placement and that of academic studies; consequently the scope for positive learning transfer across domains is increased (Salomon and Perkins, 1987, 1989; Cox, 1997). However there are two caveats to this: firstly the scope for positive transfer between the domains may be asymmetrical: while the universities may increasingly strive to provide the intern with cognitive attributes which will enhance his or her contribution to the activities of the host, there may be no such effort on the part of the host for the return transfer (or indeed the host may not be in a position to provide such attributes which are measurable in conventional academic terms). Secondly, apart from what might be termed the micro-reservations expressed above, there are macro issues relating to the nature and efficiency of the flows (and direction) of learning between the two domains which remain largely unexplored and unresolved, with many commentators questioning the assumptions of automaticity in learning transfer between domains (for example, Cornford, 1991, Yelon, 1992, Cox, 1997, Cornford, 2002, Hager, 2003). In the absence of any substantial evidence base, claims of enhanced academic performance post-placement, may resolve upon

marketeting - the drive to recruit students. Moreover, there is the issue of the transmission mechanism: it is not self-evident that work experience translates automatically into enhanced academic performance (Daniel and Pugh, 1975; Taylor et al, 1982; Salomon and Perkins, 1987, 1989; Holding, 1991; Yelon, 1992; Au Yeung et al, 1993; Ryan, Toohey and Hughes, 1996; Cox, 1997, Parilla and Hesser 1998; Cornford, 2002).

3.8 Improving Placement Arrangements: The Primary Elements of an Architecture for Transfer of Learning

To minimise inferior placement experiences and to maximise potential benefits, Bournier and Ellerker (1993) suggest that universities must focus on what is to be achieved through placement, and be aware of the learning constraints on the student during the placement. It is argued that the universities need to plan and manage the placement experience more effectively and to design programmes that focus upon:

- i. The relationship between the placement and the learning outcomes for the course as a whole.
- ii. The structure and position of the placement within a course.
- iii. Better understanding of the underlying processes and nature of learning operating within the placement environment.

Thus it is argued that a laissez-faire approach to placement is not a serious option in terms of exploiting the potential benefits of the internship and of optimising the pedagogic opportunities that have been in the past largely overlooked. In addition, the suggestion is that there needs to be a reassessment of the frequency, duration and timing of the placement; that the traditional division of sandwich programmes into *thin* (two blocks of six months) and *thick* (one block of one year) is also overdue for re-evaluation, and that alternative arrangements might be better suited to different classes of programmes, and that greater flexibility of placement arrangements might elicit improved outcomes.

3.9 The Place of WBL in the Production and Use of Knowledge

From the foregoing discussion in this chapter, the question arises as to the extent to which, if at all, one can functionally distinguish between work-based learning and learning rooted in the higher education system for the purposes of tentatively describing the conditions under

which there will be positive flows of transfer of learning. In this respect, Brennan and Little (1996) suggest that the distinction between the production of knowledge and its transmission, is useful in that with research (production of knowledge) the mapping between domains is fairly well-defined, whereas it is less so in terms of the transmission of knowledge (teaching and learning). Scott, (1995) argues that the distinction between the production and transmission of knowledge is hazy in Mode Two, largely because there is no authority which determines the validity of any new knowledge; moreover, the results of such knowledge production (and its transmission) will tend to be local (to the company, say) rather than having universal applicability (as would be, presumably, the case with Mode One knowledge). The degree to which any such “local” knowledge production and processing can be fully internalised by the company will be a function of time: internalisation will have more relevance in the short term; in the medium to longer term the laws of markets and the degree of competition – including the existence of barriers to entry - within which a company operates will ultimately determine both the success of any new knowledge which has been internalised (in terms of its contribution to competitive advantage), and the rate at which it becomes externalised and available to its competitors – the patent laws notwithstanding. However this does not address the issue of how such new knowledge which has been created in the workplace will find its way to the academic domain, let alone whether it is likely to do so through the medium of the returning placement student, nor of whether the academic domain is likely to have structures and mechanisms for recognising such events were they to happen – a question once more of what it is that is being evaluated in traditional modes of assessment.

3.10 Models of Placement: *Work Environment* and *Learning Environment* Architecture

The forms that the formal extended placement may take are many, varying in the length and number of the placements in a course, as well as the timing. Generally these differences for the most part can be summarised as representing either a *thin sandwich* model, or *thick sandwich*. The former will usually comprise two or more periods of placement, the placement period ranging from between three and six months. These are still common in engineering programmes. The *thick sandwich* model will be one period of approximately one

year, usually at the end of year two academic. Within these forms which are differentiated initially in terms of duration and frequency of the placement, there are many variations in terms of their structural characteristics. However for the purposes of this thesis two distinctive architectures are identified and defined by this researcher

- i. The *work environment* architecture
- ii. The *learning environment* architecture

3.11 The Work Environment Placement

In this approach the university focuses upon preparing the student for placement; that is, *supplying* the student to meet the needs of the host organisation; little is *demanding* of the student other than meeting the host requirements in relation to conduct and performance. On return from placement the student will be expected to provide a diary or report which will be a largely descriptive account of the placement experience. There may be an element of sanction for those returned undergraduates who do not deliver the diary / report, usually in the form of not being credited with having a sandwich degree. For those who supply an excellent or poor quality report in their placement experience, there is usually nothing to distinguish them one from the other.

3.12 The Learning Environment Placement

In contradistinction to the *work environment* architecture, under the *learning environment* the *whole placement environment*, from initial information sessions for prospective students, to the preparation of the CV, instruction and practice in interview techniques, through to the interview and selection by the host organisation and the internship itself, is systematically controlled to achieve pre-determined outcomes. Retaining all of the features of the *work environment* model, additionally the university places explicit demands upon the student (and the host organisation) including that there should be specified learning outcomes from the placement. This model will include some or all of the following:

- i. Appraisal of performance in the workplace by host and university.
- ii. Assessment for academic credit.
- iii. A formal *learning contract* involving student, academic supervisor and host.

- iv. Post-placement activities such as debriefing, peer-review, presentations and seminars, case-study reports, all of which are intended to encourage reflective learning.

It can be seen from the above that the philosophy which underpins such an architecture is one which is consonant with the general philosophy of higher education where learning is not a passive activity, but is rather the outcome of complex forces among which formal tuition is only one (and not the most important one at that), while a spirit of inquiry, of reflection and of action (or of active learning) are paramount in fostering learning (e.g. Benson and Blackman, 2003; Bailey, 2004; Macmillan and Mclean, 2005; Burke, Jones and Doherty, 2005; Pedler, Burgoyne and Brook, 2005; Robinson, 2005)

3.13 Functionality and Performance: Opportunities for Testing

In Part Two of this work the above distinction between work environment and learning environment architecture will be used as the basis for investigating the conditions under which one might reasonably anticipate that placement will enhance academic performance. In using these distinctively different forms of the internship it is anticipated that insight will be provided into areas of learning theory, in particular as relating to transfer of learning, as well as insights into the nature of WBL and its relationship to formal learning structures in academe. But before that can be done, it will be necessary to give explicit consideration to theories of learning behaviour; this will be done in the next chapter and will provide a basis for consideration of how learning transfer is most likely to be effected.

Chapter 4 Explaining Learning Behaviour

4.1 Introduction

At its most elemental, *learning* is the process of acquiring new knowledge (Reber, 1995). The nature of the knowledge in turn can be deconstructed along several different lines including: knowledge of words, events, concepts, propositions and processes (operations or functional learning). Evidence for new learning in a subject may be represented in various forms: the ability of the learner to retrieve the knowledge from long term memory such as the demonstration of the meaning of words by their correct use; recalling the time and occurrence of events (episodic memory); the application of concepts and propositions analytically; the performance of requisite tasks to an acceptable standard. However, learning is more than just retrieval from memory. Säljö (1984) framed learning around five different conceptions of it:

- i. learning as the (passive) receipt of knowledge;
- ii. learning as memorising – the knowledge is not transformed, but merely reproduced when called upon;
- iii. learning as the acquisition of skills, and the associated procedures in their application;
- iv. learning as making sense of reality by abstracting meaning from the learning situation;
- v. learning as the understanding of reality.

The first two categories can be typified as *the surface approach* (Marton and Säljö, 1984), the last two categories as being the *deep approach* to learning, (with skills acquisition as an intermediate form). *Learning* can also be approached from the perspective of the various schools of thought in psychology, including that of *evolutionary*, *behaviourist* and *cognitive* schools. In the view of evolutionary psychology, learning is not only the process whereby experience modifies existing understanding and behaviour, but is also central to the adaptive processes of evolution itself, including guiding these processes - the so called *Baldwin Effect* (Baldwin, 1896, Pinker, 1997). It is not intended in this thesis to discuss the evolutionary view further. The view herein is that the approaches which are likely to be more fruitful in the context of this research problem - the nature of the learning relationship between the

internship and the academic domain – are that provided by the behaviourist and cognitive schools.

4.2 Behaviourist Theory of Learning

With its roots in Pavlov (various including 1927) and the “simple learning” associated with classical conditioning, behaviourism proposes that much learning is in response to the expectation of a reward if successful, or a punishment if unsuccessful (Watson 1924, Thorndike 1932). Reinforcing such primary conditioning factors are other psychological influences – termed *second order conditioning*. For example the student might derive emotional pleasure (Watson, 1924) from a particular teacher’s presence; this positive emotional attachment could become associated with the subject being learned; by transference or association, the subject then becomes the object of pleasure. While the overall influence of the behaviourist approach has waned in the face of other schools of thought such as the cognitive and environmental approaches, Watson’s theory of the emotional quality of learning has continued to influence learning theory. The idea of *reinforcement* can be found implicitly in Watson, but it was Hull (1943) who formally introduced it to the behaviourist theory of learning through his focus on the principle of reinforcement. According to Hull, when a stimulus-response (S-R) relationship is followed by a reduction of a need, then there is an increased probability that in similar situations in the future, the same stimulus (S) will elicit the same prior response (R). *Reinforcement* can be defined in terms of the reduction of a primary need. In the same way that there are primary drives, Hull believed that there were also secondary drives; associated with the latter are secondary reinforcements: “*If the intensity of the stimulus is reduced as the result of a secondary or learned drive, it will act as a secondary reinforcement*” (Schultz and Schultz, 1987, p 241). In Hull’s system, the S-R association can be strengthened by increasing the number of reinforcements. As with the emotional content of learning, so too has the notion of reinforcement transcended the decline in the influence of the behaviourist approach and today can be found at the centre of various non-behavioural theories of learning. Continuing the behaviourist tradition and developing it further, Skinner (1954) drew together the threads from Pavlov and Watson, in his *operant conditioning* model of learning. Here subjects are immediately rewarded or reinforced whenever they make correct responses. In this approach complex learning then becomes a

matter of reinforcing a sequence of correct responses. Learning, in Skinner's model is the reinforcement of sequential *bits* of correct behaviours in which the desired outcome of the teacher is formed by both the sequence in which the bits are ordered, and in the nature of the reinforcement. *Programmed learning* is posited upon this fundamental idea of Skinnerian learning, including the notion that a complex skill is optimally taught by "unbundling" it into its fundamental parts (Ashcroft and Foreman-Peck, 1994). To summarise: the behaviourist model of learning, also known as *conditioning theory*, emphasises the central role of rewards and emotions in motivating learning behaviours, as well as what might be termed the technical unpacking of tasks into manageably sequenced bits. In addition, to move away from the looseness that they associate with "commonsense" definitions of learning and to indicate the technical nature of their view of what is involved in learning, behaviourists have sought to define learning in a uniquely behaviourist way: for example that offered by Kimble (1962, p27), in which learning is seen as "*a relatively permanent change in response potentiality which occurs as a result of reinforced practice.*" This focus on reinforcement and performance – the latter being ultimately the external proof of learning having taken place – has a resonance with at least the practical functionality of the placement: the student during the placement, at a minimum is expected by the host to be capable of learning and performing basic functions consonant with the efficient operations of the host organisation and the achievement of its goals. One of the questions which will have to be examined in greater depth is whether this mechanism is also capable of explaining higher order learning functions, and whether these are likely to involve cross-domain transfer, and in particular, in the direction of workplace domain to academic domain. This will be treated in the sections covering skills, task performance and higher order problem solving (for example, 5.15 and 5.16 below).

4.3 Problems With the Behaviourist Approach

There are some problems with this approach to learning, not least of which is the notion, connected with the "needs theory" linkage in the model: that is, that there is an internal mechanism that drives the organism to behaviours (successful learning) that will reduce such needs in order to "achieve equilibrium" (Ashcroft and Foreman-Peck, 1994). This view takes no cognisance of the perceptual /cognitive role of emotions, for example. Emotions have,

independently of the need for rewards or attention, a positive cognitive role, and will colour the way an individual perceives a learning situation, and most importantly, emotions may vary in scope and direction between people and between people and institutions. Thus not only does the behaviourist model over-characterise the rewards / punishments content of emotions in learning contexts, but it underplays the manner in which the same emotive content of cognition and learning colours the situation for the learner. In which case it is also underestimating the variables that enter into the process of “constructing meaning” (Ashcroft and Foreman-Peck, 1994). Finally if a Skinnerian model is accepted, there is the problem of how to deal with failure to learn. Do differences in abilities to assimilate information, to modify it and apply it in cognitive situations of decision-making and problem-solving, do they arise out of differences between individuals in their propensity to “need” rewards or indeed in differences in their averseness to punishments, rather than differences in say, “rounded intelligence” or for that matter, differences in environmental factors? Additionally, there are some issues of an ethical dimension that are not addressed by the behaviourist approach. Conditioning, whether classical or operant, may be thought of as an exercise in manipulating the learner’s responses either acting through organic stimulus-response (S-R), or the rewards-punishments (*needs-reduction*) S-R. The implication is that the teacher is in a position to determine the response of the learner, elicited through the former’s manipulation of the teaching-learning frame and the largely passive role of the learner in this frame. Thus, in this behaviourist interpretation, it is equally possible to have the student learn morally reprehensible material and values (or indeed otiose matter), as it is to instil rounded, enriching, worthwhile values and skills. Notoriously, Watson, (1924), wrote:

“give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I’ll guarantee to take any one at random and train him to become any type of specialist I might select – doctor, lawyer, artist, merchant chief, and yes, even beggar man and thief.” (Quoted in Pinker, 2002, p19).

Additionally, there is the haphazard nature of learning in the behaviourist approach whenever the student approaches a guessing strategy which duly elicits rewards. Can the behaviourist model explain beyond the simple level of learning? Can it ever reach out beyond the concept of learning as being controlled and manipulated by the teacher, and in which any *empowering* of the learner is at the discretion of the teacher? Indeed when one conceptualises learning (Säljö, 1984) as being more than just the acquisition of knowledge, more than the

memorising of facts and relationships, more than the acquisition of skills (physical and cognitive), when one understands learning as all of these *plus* the powers to understand and construct reality, as well as, crucially, the power to change reality by *working on* all types of knowledge, then one can see that the behaviourist view is a grossly attenuated version of learning. In which case the value of the behaviourist teaching-learning frame might be narrowly circumscribed to lower-order tasks and activities in which there are clearly demarcated and unequal power relationships, and in which the central nexus for learning is that of naked and immediate gratification (however derived).

4.4 Cognitive Approaches to Learning

The starting point of the cognitive perspective in psychology is the emphasis on the internal mental processes from which spring behaviours, among which are learning and task performance. For Kellogg (1997), cognitive psychology as a discipline is defined as

“the study of human mental processes and their role in thinking, feeling, and behaving. Perception, memory, acquisition of knowledge and expertise, comprehension and production of language, problem solving, creativity, decision making and reasoning are some of the broad categories of such study. (Kellogg, 1997, p4)

For Reber, (1995), cognitive psychology is a general approach in which behaviours, including learning, are not specifiable in terms of their exterior (observable) properties, but rather need to be studied for understanding in terms of mental events, internal processes and representations as well as in terms of beliefs and intentions. When applied to learning behaviour, the cognitive theory of learning does not discard all of the behaviourist view, but rather sees the latter as a seriously flawed and incomplete account of learning with mistaken account of such processes as are involved in thinking, language and decision-making and problem-solving (Reber, 1995).

4.5 Cognitive Learning Theory: Basic Processes

In contrast to the behaviourist approach to learning with its starting point of external manifestations of behaviour as responses to stimuli, the cognitive approach begins with the internal mental processes which characterise the transmission of information (or knowledge of any type). This typically involves the perception of information by the learner, the encoding of that information into short-term memory followed by higher-level processing

that leads to the storing of the information in long-term memory. The effectiveness of such learning – and ultimately this will be evidenced in the speed of retrieval when required and the degree to which there has been any degradation of the material when it is retrieved – is a function of a range of variables including: *attention* (Shiffrin and Schneider, 1977), *rehearsal* (Craik and Lockhart, 1972) and *levels of processing* (Craik and Tulving, 1975). Each of these variables has its own importance in learning efficiency: in the case of *attention*, some indication of the importance of good mental health in learning is evidenced by studies that show that individuals suffering from depression often have reported difficulties in remembering, with depressive illnesses tending to be associated with reductions in available attentional resources (Ellis, Thomas, and Rodriguez, 1984). With respect to *rehearsal*, this refers to some form of practice, which can be in the form of motor-skill exercises or, say, the recitation of “facts”. It has become increasingly recognised that there is scope for “cross-over” between mental rehearsal and physical rehearsal, as in the mental preparation of athletes which involves a detailed interior rehearsal of, say, a downhill course that is to be skied, or the high-jumper who mentally works through all of the steps to the bar as well as the take-off. However mental rehearsal is not usually regarded as being as effective as physical rehearsal (Druckman and Bjork, 1991). *Levels of processing* is directly correlated with rehearsal, but is different in that it distinguishes between types of encoding: specifically it argues for the superiority of information processed at the semantic level as compared with the sensory level, and as such has parallels with the distinction between *deep learning* strategies and *surface learning* (for example, Marton and Säljö, 1984). But taken overall, learning in the cognitive representation should not be seen as primarily dependent upon memory and its efficiency. Rather, memory and the processes involved in it, should be seen as the first stages in the process of learning; if evidence of learning is to be more than just the measurement of the performance of memory – say the retrieval of “facts” – then it must also involve task performance which will permit the measurement of the learning that has taken place. Of course other evidence of learning goes beyond both the retrieval of facts and the efficiency of task performance: for example, being able to develop by adaptation, a task performance beyond the narrow confines within which it was first learned (see below on *far transfer*). *Task performance* may refer to both physical tasks and intellectual tasks or a mixture of both. Given these factors and others (including biophysical considerations at the

level of individual differences) it is unsurprising that the nature and efficiency of learning varies by circumstances (environment), by the nature of the information or learning type, and by the individuals or class of individuals involved in the learning context. The impact of these various elements in learning and its application will be considered in the rest of this chapter.

4.6 Stratification of Cognitive Learning

As noted in 4.1 above, the distinctions between *episodic* learning and *semantic* learning suggests that the processes of learning may differ depending upon the nature and type of learning required (an issue which is not really handled satisfactorily in the behaviourist approach) and in relation to differences in the nature of what it is that is to be learned. For example, in different sets of circumstances and for different types of learning, the cognitive view is that different processes are likely to be at work if learning is to be learning. Marton and Säljö (1984) found that in an experiment in the reading of a text, students who tended towards memorising the text did not perform well, while those who concentrated on reading for the meaning of the text performed better. Those who did not understand the point of the material were not deficient in their ability to do so (or at least could not be assumed to be on that evidence) but rather did not understand the material because they had not tried to do so. In a different set of experiments, they found that students could be categorised as adopting either a predominantly *surface* approach or a *deep learning* approach. It was found that even in cognitive tasks that required a deep approach to learning, students who are *surface-learners* will tend to interpret the task in a different and inappropriate way when compared with those who could be characterised as *deep-learners*. Marton and Säljö concluded that students who typically adopt a *surface approach* to learning will tend to be less successful than the deep-learners in experiments or tasks that are framed to call upon deep-learning approaches (an almost tautological proposition). The surface approach to learning has been associated with the so-called *coping strategies* adopted by significant numbers of students in the academic domain, a consequence of, according to some commentators, the over-emphasis on exam results within HE assessment schemes, and credentialism in the graduate labour markets (Becker et al, 1961, Ashcroft and Foreman- Peck, 1994). Of relevance to this thesis would be the extent to which students in work placement could be characterised as adopting

one or other of these strategies (or indeed some hybrid strategy), an issue which can only be touched upon below but one which would appear to be fertile for further research.

4.7 Learning Strategies: In Defence of Surface Learners

The categorisation of learners as either *surface* or *deep*, is not as straightforward as might appear at first hand, and the pejorative connotations in the term *surface learner* should not be uncritically accepted. Widespread as it appears to be, surface learning has an important role in many areas of learning and effective task performance and in the administration functions of information processing at all levels of economic and social life, including in that governing the effective functioning of the undergraduate student. Indeed it could be argued that given the structure of much of the examination system within higher education (and elsewhere), the surface-approach to learning is a sound strategy for many students, with some evidence that coping strategies can even foster reflective practices in undergraduates (Henderson et al, 2003). Moreover, while studies have appeared to demonstrate that students can be categorised by their orientation towards either the surface or deep approach to learning (Marton and Säljö, 1984; Brown and Atkins, 1988), it is not necessarily the case that there is a mutual exclusivity between the two orientations. In other words, one can conceive of the situation whereby if deemed appropriate, *deep learners* might adopt the surface approach. Additionally the question can be posed: are the two categories merely the logical expression of the operation of the principle of specialisation by comparative advantage being worked out in the market for knowledge? If the answer to this question is in the positive then in principle this might act as a barrier to inter-domain transfer of learning (say from the workplace to the classroom) in as much as the two domains can be characterised as being distinguished the one from the other by the favouring of deep or surface learning strategies. Indeed, if undergraduates are infinitely elastic in their approaches to learning in both domains, then to the extent that they favour the coping strategies which are associated with a predisposition towards surface methods of learning, then the barriers to inter-domain transfer of learning are doubly constructed even where the exam-based system of evaluating performance encourages surface learning at the same time as the work-based system also favours this approach. The lesson being that deep learning travels well; surface learning does not. (Maintaining the analogy, see section 5.3 below on *high road / low road* transfer,

Salomon and Perkins, 1987; 1989; see also the differences sometimes expressed in terms of *content learning* skills and that of *adaptive learning* skills – the former being associated with formal, academic learning, the latter with workplace and entrepreneurial skills). In the next section an alternative characterisation of learners will be examined.

4.8 Learning Orientations

Taylor (1983), in examining how students perceived their learning agenda, identified four distinct learning orientations:

- i. *Academic orientation* – in which goals are identifiably those associated with the academic thrust of Higher Education.
- ii. *Vocational orientation* – those goals associated with the need to find employment consonant with qualifications.
- iii. *Personal* – the orientation that is disposed towards personal development.
- iv. *Social orientation* – the identification of, and aspiration towards goals that are related to the student's lifestyle.

Further sub-division of orientations are specified by Taylor: *academic orientation* has two sub-types: *intrinsic* whereby the student focuses upon course content; *extrinsic* in which student focus is primarily in educational progression through the system. Taylor (1983) argued that a deep approach to learning was associated with intrinsic motivation and with the level of interest in the material to be learned. Entwistle, (1985) emphasises *student orientations to education*: these being “*the beliefs and attitudes people have about education as an object which they evaluate as their goal.*” Hopper and Osborn, 1975, p 123; quoted in Entwistle, 1985, p 139. Taylor, 1983 (cited in Entwistle 1985) presents a tabulation of identified orientations thus:

<u>Orientation</u>	<u>interest</u>	<u>aim</u>	<u>concerns</u>
Vocational	Extrinsic	obtaining a qualification	perceived value
	Intrinsic	being well-trained	career relevance
Academic	Extrinsic	academic progression	academic performance
	Intrinsic	subject for its sake	stimulating subjects
Personal	Extrinsic	past failure compensation	reassurance and passes
	Intrinsic	broadening horizons	new insights / challenges
Social	Extrinsic	having a good time	sports / social facilities

Fig. 4.1 *Learning orientations*: (after Taylor, 1983) in Entwistle, N, 1985, p140, *New Directions in Educational Psychology*, Falmer Press, London

Brown and Atkins (1988) identify two orientations both of which have more in common with deep learning than that of surface learning; in both characterisations the learner – the student - is not passive. These can be characterised as learners who are *knowledge seekers* and those who are *understanding seekers*. *Knowledge seekers* are involved in: storing facts; collecting skills and procedures; breaking down problems into sub-units; making links within units of knowledge; working methodically through the logical order of tasks; using systematic trial and error in the search for solutions to problems; evaluating data. On the other hand, *understanding seekers* relate information to their own experience; they link new knowledge to other knowledge; they are involved in the processes of restructuring information and knowledge for personal meaning; they are seen as seeking a holistic understanding of events and processes; they are characterised as searching for underlying structure, purpose and meaning in life and in systems; they will intuitively seek and use evidence to underpin or undermine arguments; they are practiced in the use of analogies and metaphors (Ashcroft and Foreman-Peck, 1994).

4.9 Deep and Surface Learning Further Considered

In terms of the learning processes involved, it is argued, the deep approach involves relating previous knowledge to new knowledge, and the active cognitive process of comparing,

contrasting and testing knowledge. Additionally the student who adopts this approach will tend to examine theoretical ideas in the light of his or her experience. Evidence will be gathered, organised and structured into a form that renders coherence to the information and to its relationships and cognitive consequences. Finally, it can be said that the deep approach involves the re-working of information - a process of production in which the output may often bear little surface relationship to the raw material that was worked upon. On the other hand, the surface-learner focuses upon the *signage* of the text, or problem, the very specificity of the task, the literalness of the language in which the task is presented. To be sure, the problem is tackled as a coherent whole, but one which bears little relationship to any other, and from which general principles will not be derived nor even looked for. Even where the component parts of the problem are linked, the surface learner tends not to relate these to each other, focusing instead on the unrelated parts. As Ashcroft and Foreman-Peck (1994, p 21) put it:

“The focus is on unrelated parts of the task. Information for assessment is simply memorized and acts and concepts are associated unreflectively. Principles are not distinguished from examples. The task is treated as an external imposition, and the emphasis is external and the impulse to learn comes from the demands of assessment.”

4.10 Hybrid Learning: Inducing Deep Learning?

Rogers (1983) points out, there is an in-built advantage in *learning how to learn* in that the surface approach, with its reliance on information retention, implies rapid obsolescence as new information replaces old; thus the surface learner has to constantly renew learning with the concomitant resource cost to the learner. But this cannot be taken uncritically as meaning that surface learning is a less effective mode of learning; many tasks do not require the deep-approach - for example, tasks associated with manual skills and dexterity, or with repetitive administrative processes, which have an element of automaticity after sufficient training, and which may be linked to the behaviourist approach to learning (see 4.2 above). In addition, much information needs little more than retention and the ability to be recalled on cue, (or automatically) without any critical awareness of its provenance or wider cognitive implications: for example the rules of the road, or a basic awareness of the law on the use of physical violence, or the nature and privileges of private property. In relation to Higher Education studies, as in other areas of learning, the competent learner will draw from both

modes of learning as appropriate for the task. In terms of the Marton and Säljö (1984) dichotomy, one could argue that what distinguishes the successful student from the less successful is that the former more effectively employs the appropriate modes as called upon by the tasks that he or she is confronted with. However, according to Marton and Säljö, there appears to be an asymmetry in the potentialities of the students who are characterised as being either one or other of the categories. They reported that surface learners when faced with questions whose essence was in the depth that was required, still answered in a superficial manner. They concluded that it was very difficult to induce a deep learning approach. Fransson (1977) associated a deep approach with the absence of threat as perceived by the learner in the situation, and the absence of anxiety. It might be that these two qualities are generally found in close association; however one can conceive of individuals who while registering the existence of some sort of threat may nevertheless not experience any significant anxiety over the threat. Fransson's findings would have clear implications for the perceptive teacher who sought to promote deep learning in that he or she would seek to banish a sense of threat or other sources of anxiety to the student in the learning environment. (Ashcroft and Foreman-Peck, 1994). In this respect, the previously noted (4.7 above) potential of coping strategies to elicit reflective learning have relevance (Henderson et al, 2003).

4.11 Institutional Factors in Learning and Coping Strategies

Becker et al, (1961) demonstrated the extent to which the defining ethos of the university, from the students' perspectives, provided the parameters within which approaches to learning operated. If for example, grades were perceived to be the dominant end-product, then there arises a conflict between obtaining desired grades and deep learning. Otherwise put, the assessment system operates to induce *coping strategies* in the student body. Moreover, it has been argued, (Ashcroft and Foreman-Peck, 1994, p21) that assessment systems "*which elicit a surface approach block the development of any interest in the material to be learned and therefore tend to preclude a deep approach.*" Säljö (1984) has shown that students read differently dependent upon how they expect to be assessed. But in response to the apparent conflict of interest inherent in coping strategies – that is the hypothesised conflict between obtaining good grades and meeting the defining ethos of the university – one can argue that if

at the outset deep learning strategies are demonstrated to be more likely to produce good grades than other strategies, then the contradiction is resolved. The issue then becomes one of not so much learning strategies but of *teaching strategies* (and assessment strategies). This raises some obvious issues in terms of the nature of any differences in the defining institutional contexts of learning as between the classroom and the workplace. These will be considered in the next section.

4.12 The Institutional Context of WBL: The Host Learning Ethos

Ramsden (1992) considered the extent to which characteristics of the context of learning aided or hindered the efficiency of transfer of learning. Various authorities (Becker et al, 1961, Säljö, 1984, Ashcroft and Foreman-Peck, 1994) have noted that the defining ethos of an organisation as well as environmental factors including the conditions available to promote or constrain learning as well as the expectations placed upon the trainee (apprentice, intern, new employee etc) and the trainee's perceptions of what is expected of him/her, will determine the nature and scope of the learning that is effected. In relation to the issues of integrated undergraduate internships, these issues translate into questions concerning how the institutional ethos of the corporation (or other host organisation) impacts upon learning opportunities and whether these are likely to engender deep learning, surface learning or indeed coping strategies; and whether, whatever the student response to this learning situation, the learning potential is realised and is suitably transferred back to the academic environment upon return to studies (positive transfer of learning inter-domain). A corollary of this is the extent to which the university context promotes a type of learning that may not be congenial to the needs of the placement-hosting organisation. This dichotomy is perhaps best exemplified by the results reported by Becker et al (1961): it was argued that US medical education on campus had little in common with the demands of medical practice; in effect, they argued, medical students learned to be medical students at medical school, and learned to be doctors only when they had commenced medical practice. While this might be regarded as an extreme set of propositions, it nevertheless is a cogent argument for the more widely accepted view that learning in HE can be seen as primarily centred on the individual and his or her achievements (notwithstanding the increased use of group work across courses); while that learning which takes place in the workplace is overtly context-specific

and team-oriented (and in which there may be no formal instructor whose primary role is that of instructor). To the extent that the universities have come to recognise this dichotomy, and to the extent that this is reflected in evolving attitudes to learning (and teaching) styles and innovative methods of assessment, as well as the increased focus on transferable skills (CVCP, 1998, Boyd, Knox and Struthers, 2003), then this should be evidenced in a “better fit” between the two modes of learning and evaluation, and in principle should increase the potential for transfer of learning between the two domains. To the extent that the two domains differ in these areas, then inter-domain transfer of learning will be dependent upon a *coincidence of practice* and will only be consistently facilitated when the architecture of placement is so configured to map across the domains. In the next section the issue of configuring the architecture of placement to facilitate learning transfer will be considered.

4.13 The Context for Learning: Designing for Transfer

Drawing upon Ramsden’s (1992) work on the nature and role of the context of learning on the efficiency of learning transfer, Entwistle and Smith, (2002), rejecting a general theory of learning, propose a theory of learning which brings together the individual activities of the learner and the design of the learning context, arguing forcibly that

“The attempt to provide a theoretical framework to describe learning in general, of all kinds and across quite different contexts, is likely to prove as elusive as the ‘theory of everything’ sought by physicists.” (Entwistle and Smith, 2002, p323)

Translated into the context of the intern moving from the academic domain to the workplace domain, (and vice versa) factors which would have to be taken account of in configuring an architecture which would enhance the potential for positive transfer of learning would include the nature of the relationship between the intern and the supervisor-manager (or workplace tutor), as well as the context within which the learning takes place; both of which will influence the effectiveness of any learning and the potential for transfer across domains. With respect to the relationship between the intern and the workplace supervisor (or trainer), perceptions of the relationship – including the psychological contract as perceived by both parties – will inform the nature and scope of learning; this aspect will be dealt with in Chapter 7 when the role of contracts in learning is dealt with in some detail. With respect to the other element in the equation of designing for transfer, that of *context of learning*,

Ramsden (1992) argues that it should be understood as not only including the subject-matter and the set of skills and other learning attributes that are being taught (or made available for transfer) but also such broader considerations as the general and specific operations which are being undertaken in the institutions or firms. In the context of say, a university, a relevant set of contextual factors would include the variations in teaching and assessment procedures between different subjects and across different academic units, as well as differences in the physical environment within which the learning is expected to take place (classrooms, laboratories, computer suites and the likes. In addition to these overtly environmental factors (intellectual and physical), an overarching factor which is less obviously environmental in nature, is that of how the student perceives the defining ethos of the university – in other words what is the point of undertaking the graduate programme, what is the point of undertaking the internship? If a large part of the answer to these questions is framed in terms of examination success as being the ultimate indicator of achievement and learning, then as previously noted above, one is then facing the prospects of coping strategies with the consequences for the type of learning undertaken by the student both in the academic domain and in the workplace. Taken together these diverse and complex contextual factors can have unpredictable consequences for learning transfer, but for Ramsden (1992) they will include fostering a predisposition to surface learning or coping strategies: specifically, they are apt to encourage the learner to adopt strategies aimed at assessment and examination success, and they tend to discourage a deep learning approach. This contextual outcome is associated with the concept of the “the hidden curriculum” (for example, Snyder, 1971; Miller and Parlett, 1974, Marton and Säljö, 1984): student perceptions of assessment, teaching and courses are likely to influence their approaches to learning, apart from any “objective” attributes of the context of learning (such as the teaching/learning structure as between lectures, workshops, tutorials etc., or in the case of placement the operational context within the firm or host within which learning is expected). Ramsden (1992) concludes that a major influence on student learning in the university context will be the level of interest the student brings to the problem or task, as well as any previous experience of the task and related areas. In addition there will be differences in the contextual influence on learning which will be related to individual differences; but this is also increased in complexity by the student perception of how the work will be assessed, as well as the students’ perceptions of their level of control

over the learning method available. This raises some important issues in the analysis of the context of learning that is the placement environment, including such potentially critical issues of how the placement is to be assessed and whether it carries academic credit for workplace learning (Jackson, 1995). All of these issues, it is argued, would be central to the process of designing a context for learning when framing an architecture of placement which could be reasonably expected to provide the conditions for cross-domain transfer of learning in both direction.

4.14 Academic Learning and WBL: Deep Versus Surface?

As previously noted, Marton and Säljö (1984) categorised students as adopting either a *deep learning* approach or a *surface learning* approach. In the former case, the learning involves relating existing knowledge to new knowledge, and the active cognitive process of comparing, contrasting and testing knowledge. The student who adopts deep learning, will tend to examine theoretical ideas in the light of his or her experience; evidence will be gathered, organised and structured into a form that renders coherence to the information and to its relationships and cognitive consequences. The *surface-learner* however, focuses upon the surface features of the problem, such that each problem, *in extremis*, is novel. Even where the component parts of the problem are linked, the surface learner tends not to relate these to each other:

“The focus is on unrelated parts of the task. Information for assessment is simply memorized and acts and concepts are associated unreflectively. Principles are not distinguished from examples. The task is treated as an external imposition, and the emphasis is external and the impulse to learn comes from the demands of assessment.” Ashcroft and Foreman-Peck (1994, p 21)

In the context of internships and the learning activities of the intern, there may be a case to be made that deep learning is inappropriate or at least does not make best use of resources for the host or the student in placement. And while the division proposed by Marton and Säljö (1984) implies a hierarchy of learning in which deep learning is the acme to be aimed for, this does not mean that surface learning is otiose in character, or that WBL is necessarily inferior – such a judgement could only be arrived at in a broader consideration of context and of the objectives of different types of learning: many tasks in the workplace do not require

the deep approach - for example, tasks that are administratively repetitive or system-determined responses are fundamental to the continued functioning and efficiency of businesses and other organisations such as schools, universities, hospitals, local government offices etc. Moreover, even in the context of the academic studies, as in other areas of learning, the competent learner will draw from both modes of learning as appropriate for the task. In the workplace, the worker, or the student in placement, will draw upon the strategy that is most likely to be appropriate to the situation. Thus the successful student (or learner) is differentiated from the unsuccessful by the appropriate deployment of the learning mode for the tasks in hand. The question of pertinence to this investigation is the extent to which it might be valid to categorise learning in one domain as being predominantly characterised as depending upon *deep* knowledge structures, while that of another domain can best be characterised as depending upon *surface* knowledge structures. More specifically, is it valid to characterise academic learning as being largely concerned with deep learning, and that of the workplace as being largely concerned with surface learning? If it is the case that the two domains can be consistently distinguished the one from the other in terms of the rate of deployment of the two different modes of learning, then the problem of transfer becomes more taxing, but at the same time becomes more transparent which should provide some guidance in moving towards a solution in terms of designing for transfer. In the next section the nature of work-based learning is considered in more depth.

4.15 WBL, Placement and Experiential Learning

There is no generally accepted single definition of *experiential learning*, however most definitions will carry some of the elements below (Bernstein et al, 1997):

- i. The learner is not a passive actor; the learning process involves the learner actively.
- ii. There is a relatively permanent change in knowledge, skill, expertise etc.
- iii. There is increased “*response potentiality*”; that is to say, the change may not be immediately observable, although in principle the increased learning should be measurable in terms of performance.

- iv. The learning is *reinforced*. In the absence of reinforcement there will be no permanency in the changed state of the subject. With practice, new learning, via reinforcement will increase performance and embed the new learning.

The research problem being investigated in this work concerns the relationship between learning achieved in the workplace and whether and to what extent it can be transferred to the academic domain by the intern on return to studies post-placement. To an extent greater than that learning which is the product of formal academic learning (seen as highly structured and stylised in content, delivery and context), learning taking place in the placement might be characterised as being to a significant extent *experiential* in that while having the attributes enumerated above, it is not in itself the intended end product of a set of activities designed to elicit that learning – in other words much of the learning in the workplace (for the intern and the regular employee alike) is subsidiary to the goals of the organisation even though such learning is an essential input for the efficient realisation of those organisational goals.

Whatever learning takes place in the placement is not seen as an end in itself, but rather is valued in terms of how it contributes to the successful functioning of the organisation. In terms of the “delivery” of learning in the workplace, it will be structured upon some basic training (of systems, say), and it will be augmented by practice and custom, rather than being formally delivered as part of a deliberative transfer of learning process (“teaching” narrowly conceived). Moreover, such learning will be closely associated with the acquisition of *skills* and *competencies*, both of which categories of learning are as yet in practice and in status, subsidiary to formal academic learning in the academic domain, even as they are increasingly imported into that domain (an issue that is treated further in 4.18 below). Of immediate interest in this section of the investigation is the extent to which it is analytically useful to characterise WBL as being largely experiential, and the extent to which this in turn helps one understand the relationship between WBL and learning in the academic domain; and in particular whether this distinction, if valid, provides insights into the nature of the difficulties involved in effecting transfer of learning from the placement to the academic domain. In terms of the definition offered by Bernstein et al (1997) above, it is clear that there are common aspects shared between WBL and that which is sought to be engendered in the classroom: increasingly in the university the undergraduate is encouraged to be an active learner through workshops, team-based assignments, games and the likes; there should be

some indication of a permanent change in expertise (the final year economics undergraduate will be equipped to automatically apply the tools of demand-and-supply analysis to a myriad of everyday phenomena such as interest rates, exchange rates, employment prospects, wage differentials and the likes); and one would expect in terms of *response potential* that across a range of activities – some of which might be domain-specific and others not - the graduate will bring to a set of problems or tasks a range of generic attributes from which solutions or appropriate responses are likely to emerge. In which case, there is a certain artificiality in the distinction between experiential and formal learning, which would suggest that the problem of inter-domain transfer may be one of the other barriers to learning, rather than simply one caused primarily by differences in modes. In the next and following sections experiential learning is further considered in relation to learning cycles and professional development; the latter being in some cases the nexus between academic learning and workplace performance.

4.16 Kolb’s Theory of Experiential Learning

While there are various representations as to what constitutes the essence of experiential learning (Bernstein et al, 1997), Kolb (1984) has attempted conceptualise it as a process or dynamic system in his four stage model (after Lewin, 1951) which is set out below:

<i>Stage One</i>	Concrete experience
<i>Stage Two</i>	Observation and reflection
<i>Stage Three</i>	Abstract conceptualisation and generalisation
<i>Stage Four</i>	Active experimentation

Schematically this can be represented thus:

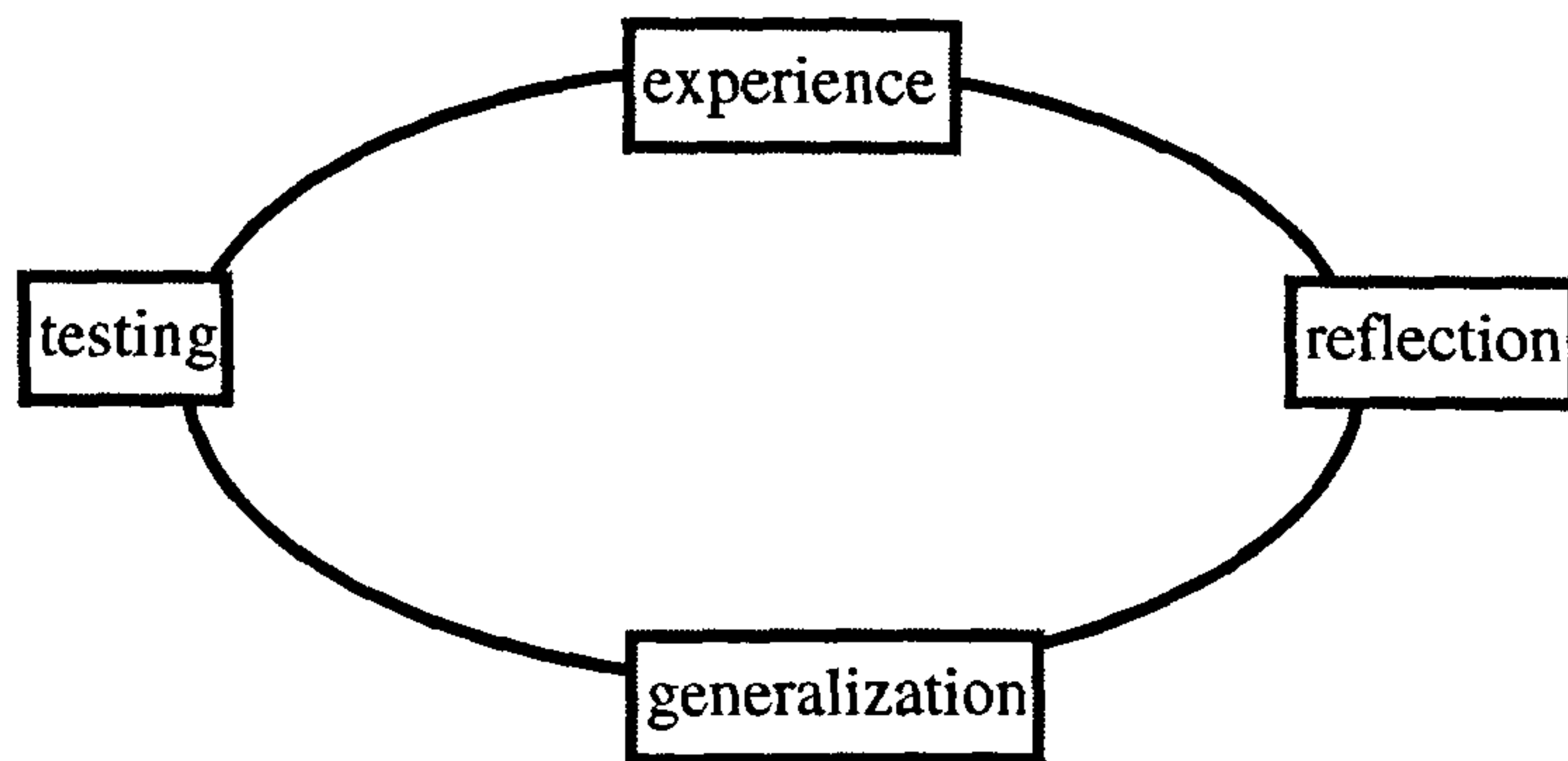


Fig. 4.2 A Lewinian learning cycle (Adapted from Kolb, D, 1984, p21, *Experiential Learning*, Prentice-Hall)

The Kolbian learning cycle is largely self-explanatory: the learner (trainee, new employee, student-in-the-workplace) is subjected to a range of experiences, some of which will be system-determined, others less so. The learner does not come to such experiences as a *tabula rasa*; instead the learner will be able to make sense of some of these experiences by matching them to others with which he or she has been familiar (through *schema*, for example, which develop out of learning from one's environment, Kellogg, 1997). In the next stage of the cycle, there is conscious observation and *reflection*. At its most simple, reflection involves thinking about the significance of events, processes, actions, behaviours. When reflection is considered in terms of schemata, it may be represented in terms of the *tuning* of existing schemata to accommodate novel experiences; in which case the learning involved leads to a stretching of existing schemata (Kellogg, 1997). If the experiences and observations are of such a rich complexity and novel, then another form of accommodation occurs within the schemata framework, termed *accretion*, whereby individual schema are modified and reshaped permanently. (Kellogg, 1997). The third stage, *generalisation*, involves the learner moving from the specifics of an experience or a learning application to abstraction of the general principles which are thought to structure the complex and specific detail of the phenomena, and this process of abstraction or conceptualisation is operationalised by the learner making judgements or decisions which arise from the specific case which initiated the learning, but which are then applied to a class or category of phenomena or relations, and

which will lead logically to sets of expectations as to future events surrounding these phenomena or relations. The final stage in a cycle, according to Kolb, is that of *testing*. The new learning, or more accurately, the new expectations or modified assumptions about behaviours and responses, is then matched against concrete experience, and the learning cycle is then repeated in its general form.

4.17 Kolb's Learning Cycle and Professional Development

Kolb's model of learning is not restricted to that of either workplace learning or learning in a formal educational environment. It has characteristics which might be termed *Piagetian*, (Piaget, 1970) in that it can also be represented in developmental dimensions, as presented below:

- | | | |
|---------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Phase 1 | <i>Acquisition:</i> | Birth to adolescence; the acquisition of general learning attributes (concrete, reflective, abstract and active modes of learning) and the development of cognitive structures; |
| Phase 2 | <i>Specialisation:</i> | Through formal education and / or career training to early experiences of adulthood in work and personal life, when certain modes are emphasised at the expense of others depending upon the contexts for learning and development; |
| Phase 3 | <i>Integration:</i> | Characterised by the reassertion and expression of non-dominant adaptive modes or learning styles. |

Each of these phases of development and learning should be seen as involving some degree of overlap and not as discrete elements in the process of cognitive development. Its potential for application to the understanding of workplace learning in general and that of placement in particular has been tangentially approached by Weil and McGill (1989) in looking at the learning processes involved in professional development – in particular in the areas of problem-solving, decision-making and creativity. In this approach, *professional education* is distinguished from other forms of education (formal and informal) in terms of control of content, control of delivery and of assessment as well as being defined by specialised and integrative goals. Relating these aspects to the Kolbian developmental representation, elements of Phases 2 and 3 above have relevance to professional education. But given the highly specialised and integrative quality of professional education – including that

conducted in part at least in integrated programmes within HE, the issue of inter-domain transfer of learning perhaps does not have as much salience as that which is clearly the case in the kinds of programmes covered in this work. However, to the extent that the student on placement can be thought of as being in an environment which has some of the characteristics associated with formal professional education (and this might be more true of some placements than of others) Kolb's depiction of the learning processes involved in experiential learning may provide some illumination of the difficulties encountered and of the issues raised at various points in this thesis.

4.18 Problems With the Kolb Model of Experiential Learning

Race (2003) attacks learning-cycle models, such as that of Kolb, arguing that instead of a sequential cycle such as - *active experimentation, concrete experience, reflective observation, and abstract conceptualisation* – humans learn and respond to new experiences, problems and tasks in a more sophisticated way than merely processing sequential operations; instead, *parallel processing* of over-lapping or indeed of unconnected information, better characterises cognitive processes including those involved in learning at every level:

“when one does something one has feelings and thoughts about it; one always make sense of feedback as one does or think about things; one is constantly in the process of making sense of the experience of what one tries to do or think; and while one may focus on one particular aspect of learning more than others at any given time, one doesn't suddenly stop doing one thing and switch to another”.

(Race, 2003, <http://www.lgu.ac.uk/deliberations/eff.learning/happen.html>)

Race uses the analogy of ripples in a pond to illustrate his approach, in which there is feedback, digesting, doing, wanting. All four Kolbian cognitive processes are operating all of the time when confronted with novel events; and all four are interdependent. Race, (2003) as a counter to Kolb, has proposed the following model based upon an inferential scheme which identifies the essential steps for successful learning as:

- i. Wanting to learn; that is, the intention or motivation of the actor.
- ii. Learning by doing.
- iii. Learning through feedback.

iv. Making sense of what has been learned.

As to the practical implications for learning in general, if one accepts Race's analysis, it would appear that *learning strategies* have less of a role to play than other commentators have argued (e.g. Cornford, 2003), but this may be a consequence of the fact that both the Kolb and Race systems are largely descriptive of the learning processes involved where experience is placed at the centre. However some work has cast doubt on the efficacy of learning strategies where experiential learning is context-dominant: Cook (1999) argues (in the context of pre-registration nurses and their educational endeavours), that one should question the claims that specific experiential learning strategies are most appropriate for promoting self-awareness, or that they provide greater understanding of theory, or give greater depth of meaning to theory; and that there is a need for a more critical appraisal of experiential learning strategies. Effectively the implications of Cook's findings is that there is a learning barrier between the practical and the theoretical, one which in the context of the research questions considered in this thesis, can be interpreted as being a barrier to transfer of learning between work-based (practical) learning and that which takes place primarily in the formal setting of the university or college. Indeed there is a plethora of literature across the range of professions that would support this pessimistic view of the scope for bi-lateral transfer of learning (e.g. Turney, (1988), Au Yeung et al, (1993), Bournier and Ellerker (1993) Ryan, Toohey and Hughes (1996))

4.19 Theoretical Approaches to Learning: Concluding Remarks

In Chapter 3 it was shown that the issue of whether or not work placement will have an impact on academic performance post-placement is in essence a question of *transfer of learning* and in particular a question as to the conditions which are most likely to create the potential for such transfer between the two learning domains involved in the placement relationship – the host organisation and the university. To better understand what is involved in transfer of learning, this chapter has looked at broad theories of learning. In consideration of the behaviourist and cognitive approaches to explaining learning behaviour it was tentatively proposed that the cognitive approach led to a better explanation of the type of learning which is at the heart of the mission of higher education. However it was also recognised that there are aspects of learning behaviours – in both domains- which are

consonant with the behaviourist explanation. From these considerations the analysis moved on to matters of modes of learning – *deep* versus *surface* approaches – as well as learning strategies and orientations. Consistent with the view that cognitive processes are the key to understanding much of the philosophy of learning in HE, it was seen that inducing *deep learning* in undergraduates is the mode to which HE aspires. At the same time it is acknowledged that when one considers the issue of student learning strategies – where such strategies are to be understood in terms of not simply *how* the student should approach learning for it to be effective, but *what* the student chooses to learn – then one admits that *surface learning* has its role to play. Such an approach as a deliberate strategy (and not simply as a default position for weak and poorly motivated students), is associated with the so-called *hidden curriculum*, whereby the student perceives the endgame of studies as being examination success, which in turn is linked to employability. Even students with a natural disposition towards deep learning may opt for surface learning, or an admixture of both; in effect this can be interpreted as a manifestation of the laws of comparative advantage determining efficient (intellectual) resource allocation. A variation on the surface learning strategy is that of *coping*; it was shown above (4.13) that in certain circumstances coping strategies may induce deep learning; from which one can adduce that divisions of learning styles into such as *deep*, *surface* and *coping*, while being analytically useful may also obscure the extent to which students (and other learners) draw upon a range of learning styles and strategies which may be context-dependent rather than being cases of trading-off one against the other. In further considering the issue of context-dependent learning, this chapter then looked at institutional (environmental) factors in learning and examined the argument that the institutional (environmental) context of WBL and that of learning in the academic domain, reinforced the natural barriers which exist to any transfer of learning (see Chapter 3). However on closer scrutiny the balance of the argument which emerged was that while the barriers to transfer between the two domains are formidable, they cannot be explained away in terms of a clear dichotomy in which academic learning is characterised as *deep*, and that of WBL (or experiential learning narrowly conceived) as having primarily *surface learning* features. Finally, in the context of examining some accounts of experiential learning, the issue of *professional education* was touched upon as a candidate for bridging the learning gap between the academic domain and the workplace of the placement undergraduate. It was

found that this approach might have more relevance to some programmes of studies which have integrated placement, than to others with the same placement requirements, and thus could not provide a general solution to the problems of transfer of learning highlighted in Chapter 3. In the next chapter the nature of transfer of learning will be considered in terms of theoretical principles and in terms which will attempt to link the general problem of transfer to the specifics of inter-domain transfer between the workplace and that of university.

Chapter 5 Transfer of Learning.

“Egypt chose two forceful sergeant-instructors from the Army School at Zeitun, to teach squads of Arabs in Akaba how to use [mortars and machine guns] Both were admirable men. In a month, without common language or interpreter, they got on terms with their classes and taught them their weapons with reasonable precision. More was not required: for an empirical habit appeared to agree with the spirit of our haphazard raids better than complete scientific knowledge.” T E Lawrence, Seven Pillars of Wisdom, (1935, 1997, p334, Ware: Wordsworth Editions)

5.1 Transfer of Learning: Introductory Remarks

The central proposition being investigated in this thesis – that placement can have the potential to enhance academic performance of students on return to studies – is a statement about the possibility of transfer of learning between the work domain (the placement) and the academic domain (the university). Having considered in Chapter 4 theories of learning, it is now necessary to examine the concept of transfer of learning and the processes which are commonly held to be involved in such transfer. The concept of transfer of learning can be expressed variously: for example,

“how knowledge acquired in one situation applies (or fails to apply) in other situations”

(Singley & Anderson, 1989, p1);

“Transfer occurs whenever the effects of prior learning influence the performance of a later activity” (Holding, 1991, p93).

Or variously: transfer of learning can be described as occurring whenever one act of learning has an influence upon another; or the extent to which learning from engaging in one task or cognitive process, impacts upon the performance of another task or cognitive process (Holding, 1991); the influence of previous experiences on the performance or learning of new skills, and is defined as a gain (or loss) in the capability for performance on one task as a result of practice on another (Schmidt and Lee 1999).

5.2 Transfer of Learning: Behaviourist Tradition in Near Transfer

The question of transfer is concerned with how novel responses are related to older responses (Cox, 1997). In terms of the traditional approach to training in conditions of what can be termed, *near transfer* (*“the application of skill and knowledge to situations that do not differ*

too significantly from the original examples in learning” Cornford, 2002, p5), there has been a strong behaviourist tradition informing the traditional approach to training design, with the emphasis on stimulus-response in training. Thus for example, the training approach to traditional apprenticeships was posited upon the belief that transfer is only likely under conditions where the learning situation and the transfer situation are close (if not contiguous). If one takes the example of a traditional five year engineering apprenticeship as experienced by this researcher, then this translates into a traditional apprenticeship being largely on-the-job learning alongside and under the supervision of a craftsman whose main function was not that of teacher, and who would have had no training in training! General principles of learning would amount to an initial spell (say, six months) in a training workshop away from the exigencies of the production process (and away from the influences of journeymen) followed by four and a half years of working in a production environment with a journeyman craftsman (who would be changed every nine-months to one year). During this latter period of approximately four and one half years, formal training would be in the form of day release to an FE college for up to three years practical and formal exams under the City and Guilds training banner. Thus “formal” training was represented by only a small fraction of total training time as measured by the length of the apprenticeship – about 10 months out of five years (6 months in training workshop plus 40 days of day release per year for 3 years).

5.3 Transfer of Learning: Cognitive Inroads into Training

Increasingly the evidence appears to suggest that closeness of stimulus conditions between the training situation and the transfer situation have rarely promoted far-reaching transfer (Cox, 1997), and this has coincided with a general decline in the influence of behaviourist theories and the emergence of cognitive theories. In terms of theories of learning and teaching one of the practical developments arising out of this changing perspective has been the decline of the traditional apprenticeship and the emergence in the UK of the modern apprenticeship. Thus the cognitive approach to learning has made inroads into the domain of near transfer of learning. At the same time, the focus on cognitive approaches to transfer would appear to have a natural resonance in transfer of learning wherever elements of *far transfer* (“*the application of initial learning in ways that are not obvious and substantially different from the original learning.*” Cornford, 2002, p5) are involved. Transfer is still more

unlikely the further the transfer situation is from the conditions under which the initial learning (skills) was obtained; the purpose of broader forms of training such as university undergraduate courses implies that some element of far transfer is possible under the right conditions. Salomon and Perkins, (1987; 1989) in seeking to reconcile the problems of near and far transfer within the same theoretical framework, distinguish between “*low-road*” transfer and “*high-road*” transfer. Low road transfer is the case where a “*a skill has been practised to the point of automaticity in one context [and] is spontaneously elicited by a new context*” (Cox, 1997, p46). An example given is that which clearly is one of near transfer: one learns to drive a particular model of car, but all the necessary skills, once acquired, are such that the cognitive and motor-skills required for successfully driving any car are virtually indistinguishable from the initial learning context. High road transfer, on the other hand, involves deliberative mindful abstraction from one learning set to another learning set which does not exhibit obvious similarities with the initial situation. In this latter case, according to Cox (1997), central to any effective learning transfer will be the principles of metacognition and the associated need to plan and reflect upon what it is that is to be learned and what it is that is to be transferred. This in turn leads logically to the notion and principles of *the active learner*, whereby the learner has to be given instruction in learning and transfer strategies, including how these can be applied to varied situations, as well as instruction in self-evaluating techniques that allow the monitoring of the processes and of the results. However, while these processes and techniques can be represented as being posited upon cognitive learning theory, Cox sees the acceptance of the learning transfer task by the learner as being essentially explicable in adaptationist (evolutionary) terms:

“it is rooted, both theoretically and practically in the process of adaptation, in a learner changing actively in response to a context in order to reach a goal.” Cox, 1997, p53

In the terms presented above in this section, one can characterise the mode of transfer of learning which is required in both directions in the placement arrangements as being primarily of far transfer and in terms of Salomon and Perkins, (1987; 1989) Cox, (1997), will involve high road transfer methods.

5.4 The Sign of Transfer

Transfer of learning thus far has been spoken of as if whenever it occurs it will be inevitably positive – that is, that such transfer of learning that is likely to occur will have the characteristic that the effects of prior learning on the performance of a new set of activities will inevitably be to enhance the performance of the new set of tasks than would have been otherwise the case in the absence of the prior learning. However it is not always so. During the processes of learning transfer – that is when one set of learned resources is taken from its initiating context and the actor is placed in a distinctively different learning and acting environment – there may be either, positive, negative, or neutral transfer effects.

Positive transfer occurs when learning A facilitates learning B

Negative transfer occurs when learning A hinders learning B

Neutral transfer occurs when learning A has no impact on learning B

Negative *transfer of learning* has affinities with the concepts of *proactive* and *retroactive interference* (Wickens, 1972, Kellogg, 1997). *Proactive interference* refers to the case where past learning interferes with the ability to learn and remember new information: for example, having studied French in the recent past might make it more difficult to become proficient in Spanish. *Retroactive interference* is the case where the learning and recall of new, recent information interferes with the ability to remember and use prior-learned material. For example, the acquisition of new skills and proficiency in Spanish might lead to a degradation of one's long-held proficiency in French. *Interference* may have a role in understanding some of the literature which suggests that placement can form a cognitive barrier to theories learned in the university (for example, Au Yeung et al, 1993). With respect to the possibility of *neutral* transfer of learning, if, as Holding (1991) contends, transfer of learning occurs in every new instance of learning then, neutrality is not an option. However, for purposes of measuring transfer, *neutrality* would be defined in quantitative studies of performance where there was no measurable difference on task performance post-training. These and related issues are dealt with in greater depth below.

5.5 Characterising the Transfer Problem

The problem of transfer of learning may be designated using the following typology:

- i. Domain transfer of learning:

- a) Intra-domain transfer;
 - b) Inter-domain transfer;
- ii. Skills-type transfer:
- a) Motor skills transfer;
 - b) Higher skills transfer;
 - c) Mixed skills transfer

Considering each in turn.

Intra-domain transfer involves the transfer of learning within a domain; for example the application of statistical skills gained in one academic subject to another academic subject. Such transfer has affinities with, but is different from, what is termed *near transfer*.

Inter-domain (or *cross-domain*) transfer would be the transfer of learning from, say, the academic domain to the workplace. An example of that would be a graduate in HRM applying her knowledge of employment law in her role as a recruitment consultant. Inter-domain transfer has affinities with, but is different from, what is termed *far transfer*.

Motor skills transfer is frequently evident in sports activities (say tennis to badminton or sprinting to football), and certain types of industrial processes (say routinised assembly procedures). In section 5.3 above the case of traditional apprenticeships was considered: the training of primarily manual skills in such situations would be examples of motor skill development and training for transfer where the transfer situation is predominantly that of near transfer.

Higher skills transfer (associated with cognitive skills such as critical thinking and problem solving) ultimately is to be seen in the core activities of higher education, as well as other areas of economic, social and political life.

Mixed skills transfer arises wherever transfer of learning involves a mixture of both motor and cognitive skills – for example learning to fly an aircraft, undertaking surgical operations. Moreover, the issues are made more complicated by the fact that some examples of cognitive skills exercised in the workplace will have characteristics that parallel lower order skills; this is the case with routinised administrative processes, or indeed with certain types of standardised information-processing routines. In the next section one will attempt to place

the transfer problem of placement within the above system of classification. It is also the case that certain undergraduate placement programmes will involve mixed-skill transfer with elements of near and far transfer in both directions between domains- for example sandwich degree programmes in the bio-sciences (Duignan, Lush and Gomez, 2004).

5.6 Characterising Transfer from the Placement Domain to the Academic

In the context of this thesis, the central issue that is under investigation is to what extent and under what conditions is learning in the workplace during the placement likely to have a positive impact on academic performance on return to formal studies post-placement? In terms of the typology in section 5.5 above, one can characterise such transfer potential as involving:

- i. Inter-domain transfer;
- ii. Higher skills transfer

However the complexity of the issues is signalled by noting that much of the learning in the workplace during placement may be of a routinised and host-specific character – that is the learning of systems which are specific to the operation of the host organisation. The problem arising out of this in terms of transfer of learning to the academic domain, will be a question involving the student (and indeed the university and the representatives of the host), as to whether the learning is automatically transferable or whether it has to be reprocessed in some fashion through the architecture of the placement. It is even possible, where the learning gained in the placement is of such a narrowly host-specific nature, that there may be no scope for transfer of learning to the academic domain (despite Holding's, 1991, assertion on the universality of transfer in every act of learning). This issue which relates to the nature and “match” of learning to be transferred, and to the framing of conditions upon which transfer might be better facilitated will be treated further in the rest of this chapter and will also loom large in the Part Three of the thesis.

5.7 Training for Transfer of Learning

As has been noted in the introduction to this chapter, transfer of learning can be characterised as the influence of one act or sequence of learning upon another act or sequence of behaviour which evidences learning. If seeking to quantify the existence of transfer of learning, the

starting point is measuring the extent to which learning from engaging in one task or cognitive process, impacts upon the performance of another task or cognitive process (Holding, 1991). However, while Holding has argued that transfer of learning is engaged in every single instance of learning (though the value of the transfer may be either positive or negative), many researchers in the field (for example, Salomon and Perkins, 1987 & 1989; Cox, 1997; Yelon, 1992; Cornford 2002; Hager, 2003) have observed that transfer of learning is of such complexity that the chances of attaining positive transfer even in the context of what is termed *near transfer* are low. Even in the case of near transfer of relatively lower order skills, these researchers argue, automaticity of transfer should not be presumed. When it comes to *far transfer*, then the chances of automatic transfer are even lower and the need to train for transfer becomes a categorical imperative (Gage and Berliner, 1992; Cox, 1997, Cornford, 2002). The problem of transfer across domains that is involved in the placement process from the placement domain to the academic upon return to studies by the intern is likely to involve *far transfer*. But there is an additional complexity in the process since there has been an expectation that the placement itself will have involved first-stage transfer from the academic domain; effectively then, the placement, if it is to enhance academic performance upon return will involve two-way flows of learning transfer - an even more complex task which the main models of transfer do not explicitly address (e.g. Cornford, 1991; Yelon, 1992; Cornford 2002). An additional complication is given by the fact that while the scope for WBL of lower skills and competencies might be large in the placement, the scope for articulating this learning in the academic domain might be small. At this stage of the analysis it becomes necessary to consider the theoretical issues relating to transfer, including consideration of the general principles of transfer. In addition it will become necessary to set out the baseline conditions upon which positive transfer from the work experience to the academic domain might be posited with a degree of confidence. These issues will be dealt with in the rest of this chapter.

5.8 The Conditions for Transfer of Learning: Positive and Negative Transfer

Transfer most often occurs positively when two tasks have elements with degrees of similarity. Examples of *positive transfer* are widely evident in sports (Taylor et al, 1982; Ferrari, 1999; Weigelt et al 2000) where athletic skills and techniques can be brought to bear

across activities – say, the sprinter who moves to football or rugby. In terms of intellectual tasks, one would anticipate broadly positive transfer across many fields: for example the acquisition of core study skills which can be applied to specific academic tasks across different fields of study; the applicability of generic critical thinking skills and problem-solving techniques (Kellogg, 1997, Eraut 2000). Similarly one would expect positive transfer to operate in the acquisition of various manual skills. In terms of intellectual tasks, too, one would anticipate broadly positive transfer across many fields; say, the acquisition of analytical skills (science-based) to more general problem-solving; or the acquisition of “core” study skills to specific academic tasks. More dramatic instances might be found in, say, the increased application of information-processing approaches to a wide range of intellectual tasks, such as in psychology, biology and engineering. *Negative transfer* becomes salient when two tasks are superficially similar but require different responses (Taylor et al, 1982): for example, learning a new language when one has already proficiency in another with a shared root (for example, Spanish and French). However the actuality of transfer is a more complex and less certain process than these hypothetical examples given above might suggest (Cornford, 1991, Gage and Berliner, 1992; Yelon, 1992; Cox, 1997; Cornford 2002). The literature on transfer paints a vivid picture of a myriad of diverse factors interacting, often in unpredictable ways, leaving the researcher to grope for a general set of applicable principles which might provide guidelines to the conditions upon which one could reasonably expect positive transfer from one domain (say the work domain of the intern) to another distinctive domain (say that of the academic domain of the same student post-internship).

5.9 Basic Principles of Transfer of Learning

Apart from the difficulties of precise measurement of transfer of learning, there are some general principles of transfer of learning (or *rules of transfer*, Taylor et al, 1982), which owe much to the behaviourist analysis of learning, and are expressed in terms of stimulus and response (S-R) elements of the separate learning tasks. For example, consider where a subject has two distinctively different tasks to master in turn: that of memorising a list of words in a foreign language for which the English equivalents are also provided, (Task A); and the task of assembling a bicycle from all of its parts, (Task B). In terms of stimulus-

response analysis, in Task A, the stimuli are the foreign words, and the responses are the English equivalents. In relation to Task B, the same S-R principles apply to the learning of the task; in this case the stimulus is the successful completion of a stage – say fitting the tyres to the wheels – and the response is the progression to the next stage, the fitting of the wheels to the frame. But clearly in the case above, where the individual has to learn both tasks, the stimuli attached to A and B are distinctively different and have little in common, as are the associated responses to A and B. In such a case, there will be no transfer of learning, either positive or negative (Taylor et al, 1982). However, while there will be no transfer of specific learning, there may be some transfer of general information relating to *learning*. That is to say, even when tasks have no identical components, there will be some transfer of *principles of learning*. Alternatively put, the accomplishment of the two tasks will have given rise to a transfer of information on *learning to learn*. (Woodsworth and Schlosberg, 1954, Rogers, 1983). In the case of an individual undertaking two tasks in turn, where the stimuli of A and B are different but the responses are similar, then the transfer from task A to task B tends to be positive, in particular where the tasks are non-verbal. This positive transfer will be the more pronounced the less dissimilar are the stimuli. Alternatively put, if familiar responses have to be attached to new stimuli, transfer of learning is positive, and especially so when the stimuli are similar. Finally, when an individual undertakes two tasks, A and B in turn, in which the stimuli are the same but the responses are dissimilar, then the transfer of learning will be negative. In this case the second task has the effect of interfering with the learned response to the task A stimuli, causing confusion in the subject. For example, if the subject has to learn to drive a motorbike (Task A), followed by learning to drive a car, (Task B), then we would expect some positive transfer of learning in the form of general road sense. However, the same stimulus across the two tasks will induce differing responses: for example if the subject decides to accelerate the response induced depends upon the vehicle, being a twist-grip action on the motorbike and a foot-pedal action in the car; similarly for braking stimuli and responses. Another example of a similar nature would be learning to drive a car in the UK followed by driving in a left-hand drive car on mainland Europe. In relation to the potential for positive transfer of learning from the placement to the academic domain, the above principles provide some guidance to the minimum conditions which would have to obtain in terms of the nature of the learning which was to be transferred (or could be

transferred), even although the above examples are based upon behavioural principles of learning (see Chapter 4) while it has been argued in previous sections that the type of learning which is typically measured in the academic domain is best understood in terms of cognitive principles. In sum, one could reasonably expect, that at a minimum there would be some transfer of learning of how to learn (and this perhaps reconciles Holding's view with that of the dominant view of commentators in the field who are less convinced of the automaticity of transfer).

5.10 Transfer of Learning Between Distinctive Domains: Restating the Problem

In positing a relationship between placement and academic achievement, one is implying that there are aspects of learning that are transferable across these distinctive domains of cognitive activities. The core assumption that underpins assertions of positive impacts of WBL on academic achievement for undergraduates is that the transfer of learning between placement and academic tasks will be positive in both directions. That is to say that the student on taking up placement takes to the work domain knowledge and problem-solving skills (and "core skills") gained in the academic domain which will be transferable (applicable) to the problems of commerce, production and administration. In addition to this form of positive transfer, the argument goes, on return to studies upon completion of the placement the undergraduate brings back enhanced transferable skills gained in the workplace; and that these enhanced qualities relating to learning and knowledge transfer, will be transferable (applicable) to the problems which have to be solved in the academic domain.

5.11 Transfer of Learning and Placement: Asymmetrical Expectations

The assumption that there will be a positive correlation between work placement and academic achievement on return to studies implies that there are aspects of learning - problem-solving strategies, skills acquisition and so on - that are transferable across these distinctive areas of cognitive activities in both directions. Indeed, at an earlier stage in the placement process - when the university placement officer persuades companies to receive undergraduates on placement, there will be an explicit expression of the nature of the relationship in the direction of:

academic cognitive processes → *industrial/commercial/ administrative cognitive processes*. Moreover, in addition to the higher cognitive process skills embedded in the student moving into the placement, these will be bound within an overall package of generic transferable skills. The placement officer sells the undergraduate to the organisation on the basis that the undergraduate is at this stage well-equipped (if unfinished) to contribute to the organisation's goals, as a direct result of the academic (and other) skills embedded in the student. Indeed this argument for transferability in the direction of the business organisation may be more forcibly represented if the placement unit stresses that a particular student has a strong academic record. However, there is an asymmetry in this relationship, in the sense that the firm is not expected to enhance the academic performance of the undergraduate when he or she returns to studies. In other words, while the university has "sold" the undergraduate to the firm on the basis of what the firm can reasonably expect in terms of contributions of the undergraduate to the firm's goals, the firm in accepting the undergraduate for placement does not undertake to return to the university a student who will be better equipped for academic achievement. And yet, it is precisely this expectation that is employed by the university in persuading undergraduates to consider taking placement. Thus it is, that the issue of the transfer of learning lies at the heart of the placement system, and is implicitly assumed to be positive in both directions. This assumption is based upon a confused notion of the nature of the processes that underpin transfer of learning, and in particular disregards the inconvenient fact that transfer of learning may even be negative. It is precisely the nature of this process which will determine whether work placement will enhance academic achievement on return to studies.

5.12 Some Evidence on Transfer of Learning

Much of the literature on transfer of learning is concerned with the transfer of motor skills such as those of industrial plant operators or of people engaged in formal sporting activities. In some cases these studies involve motor-skill transference which also are held to have a high intellectual content provided by the context or environment within which the transfer is expected to be realised – for example that of aircraft pilots, or surgeons. In many instances the motor-skill transfer will involve less obviously cognitive content: Weigelt et al (2000) found evidence for positive transfer of learning from juggling practice with the feet to

juggling with the knees and a football control task. The aim of the study was to examine the degree of transfer between various association football skills. Kontogiannis and Shepherd (1999) in looking at industrial process engineering found that the separation of skills into motor and cognitive transfer is largely artificial and that transfer involves the interaction of both sets of qualities with differences in performance (transfer effectiveness) a function of the differences in the learning-type mix:

“Skill transfer between tasks is likely to be affected not only by common task elements but also by domain-specific strategic knowledge. Participants were required to learn how to carry out the first stage in starting up a simulated distillation column, following instruction that varied in terms of degree of explicit procedural guidance and knowledge of goal interactions. The transfer task involved continuing the start-up process to achieve the final product targets. The results indicated that, although common task elements accounted for the majority of transfer effects, strategic knowledge also played a significant role in transfer.” Kontogiannis and Shepherd (1999, p 355)

Ferrari, (1999) in investigating the role of expert knowledge, self-regulation and the intention to transfer learning in the effectiveness of learning transfer, examined subjects' ability to deliberately transfer expertise in karate when learning a closely related motor skill (*tai chi*). The subjects (N = 20) were designated as being in one of two categories in terms of expertise in karate: being *experts* or *novices*. The task set was to learn a videotaped sequence of (*tai chi*) self-defence movements. The transfer process involved self-regulation, self-evaluation of learning, and finally performance of the sequence of movements. The subjects were evaluated on self-regulation (by accuracy of self-evaluation, video use, and approach to learning). Results indicated that experts used self-regulation, learning strategies, and the video player in more complex ways in self-regulation than did the novices. Experts, as compared with novices, demonstrated their greater knowledge through the higher quality of their performance and their better comprehension of movement meaning. In other words, overall performance was better among the experts. But both groups recalled an equal number of movements. This is interpreted by Ferrari, (1999) as indicative of both experts and novices having transferred general knowledge about learning. Herold et al (2002) looked at the impact of individual differences on trainee pilots from a *Big Five* perspective (e.g. Costa and McCrae 1992, Bernstein et al 1997): the results showed that three of these (*Conscientiousness, Emotional Stability and Openness to Experience*), contributed to the

prediction of the number of hours it took for trainees to attain their private pilot's license. What seems to emerge from these various studies is that, setting aside individual differences which may affect the rate or efficiency of transfer, where transfer is achieved it arises out of a combination of elements which might be interpreted as indicating surface learning (common task components between domains) and others which could be interpreted as employing deep learning approaches (strategic knowledge of learning techniques; Rogers, 1983).

5.13 Training for Transfer: Short or Long Term Transfer of Learning?

An important issue relating to transfer of learning goes beyond the mere question of whether transfer has or has not occurred by raising the issue of the effectiveness and the extent to which the transfer is likely to endure or be retained by the learner (for example Gick and Holyoak, 1987; Schmidt and Bjork, 1992; Doane et al, 1996). In essence this raises again the distinction previously noted between surface and deep learning. Obviously it would be of interest to know not only whether placement enhanced academic performance but also whether that enhancement became embedded and endured over time – alternatively put, given that the training tasks have been mastered, what are the retention and transfer effects, and how long will they last? In analysing this issue one is likely to confront matters relating to the architecture of the placement. Gick and Holyoak (1987) found that in some cases where strategies were introduced at the training stage to facilitate performance, these could have a negative effect on retention for learning-related tasks. Conversely, training strategies that had an element whose design principles were aimed at slowing the rate of learning during the training phase had a positive impact on transfer and retention. Schmidt and Bjork (1992) in surveying the literature on verbal and motor transfer of learning, reached similar conclusions. They argued that performance during learning acquisition was not a reliable measure of transfer effectiveness; that the latter could only be demonstrated by carefully designed tests which would identify short- and long-term transfer. In examining the relationship between the degree of difficulty engendered by the training method for task acquisition and that of the degree of effectiveness of learning transfer and its retention, Schmidt and Bjork (1992) concluded that where conditions make it more difficult for participants to learn the task quickly during the initial phase of training there is likely to be more effective transfer and retention. In attempting to explain the results they suggest that the

effects are the result of additional or different information-processing activities that can degrade performance during acquisition, but which might enhance final transfer and retention. These results suggest that while the architecture of placement can be crucial for facilitating transfer, it must not be thought that the requisite design features must of necessity be aiming at making learning easier for the student in placement; per contra, they would suggest that effective transfer will be more likely where the design features deliberately include an element which slows down the rate of learning in the initial stages at least of the placement.

5.14 Models of Learning and Transfer of Learning: Characterising the Problem

It is analytically convenient to distinguish between what are broadly termed *behavioural* theories of learning, and those termed *cognitive* (see Chapter 4). The former can be characterised as stressing S-R relationships: learning is the outcome of a chain of such relationships leading to the acquisition of habits (Taylor et al, 1982), while the latter focus upon *central processes* and *cognitive structures*. The question that is pertinent to the central research problem of this thesis is the degree to which academic and practical learning in the workplace can be usefully characterised as falling into one or other of these modes, and the extent to which there may be a tension between these learning modes in practice. In other words, if different modes of learning (or training) are involved in the placement experience from those dominant in the academic domain, will these in turn be reflected in increased or decreased likelihood of positive learning transfer from placement to academic performance?

5.15 Learning in the Workplace: Behavioural Theories and Skill Acquisition

Formal training and skill acquisition, as experienced in the workplace, tend to emphasise the role of behavioural objectives (Mager, 1962). Thus training begins with the clear identification of training objectives, and instructional intent. For tasks to be behaviourally-oriented, there are three essential elements:

- i. The observable behaviour that the learner must perform to demonstrate mastery of the objective.
- ii. The stimulus conditions under which the behaviour should be observed; (the practical applications – the workplace etc.).

iii. The objective criteria of success that define competent performance.

It is not always the case that training and learning in the work environment can be considered “behaviourally-driven”, and cognitive structures also have a role to play, especially at higher levels of task performance. Thus the analysis of a task by learning mode can be integrated into training design specification (Gagné, 1985). If one conceives of different outcomes for formal academic programmes as distinct from say, practical situations in the workplace, then one has to reflect upon the configuration of the complete learning environment. In other words, if the cognitive processes are different, then the design and expected outcomes vary accordingly.

5.16 Cognitive Theories and Higher Task Performance

The behavioural theory of learning (Mager, 1962), with its root in Watson, (1914, 1930), Skinner (1938 and various), when applied to formal training and skill acquisition, stresses the role of behavioural objectives. While this may still be consonant with the fundamentals of training, development and practice for the acquisition of domain-specific competencies, and remains influential in training (especially at “lower-level” task definition and training content), psychological interest in the processes by which skills acquisition and applicable knowledge are acquired and how they function in practice, has led to an increased emphasis on the internal knowledge structures and cognitive processes that underlie task performance. In this way, behavioural theories of learning and performance have given up much ground to cognitive theories, and these now dominates research on learning across the spectrum of learning environments, and across the different types of *knowledge-rich* tasks such as chess, algebra, reading, in contrast to *knowledge lean* tasks such as free recall, paired associate learning (Glaser, 1990). To the extent that in much of the academic domain of learning, the emphasis tends to be on the deep structures of learning – what could be termed meta-cognitive structures of knowledge and its processing – then learning in these circumstances can best be understood in terms of the cognitive model. If one then considers the *academic / placement / academic* cycle as calling upon sequentially different learning structures, processes and forms of transfer, the possibility of mismatching, or lack of goodness-of-fit, or failure to effect the potential for reciprocating transfer of learning may be high. The issue for universities then becomes one of designing and managing the placement process in such

ways as to either ensure it calls upon wholly one or the other systems of learning, or finds a method of integrating behavioural structures with cognitive processes such that they are mutually reinforcing. This issue of placement management and design will emerge as central to this thesis.

5.17 Skill Acquisition and Learning: Beyond Surface Learning and Near Transfer

Annett (1991) defines a skill as:

“a behavioural solution to a particular class of problems, skill acquisition is the process of discovering the solution. If a skill is a solution to a problem, then we are directed to the analysis of the problem – how to model a successful performance.” (Annett, 1991, in Morrison, 1991, p21).

Initially applied to *motor skills*, the term *skill* was widened by Bartlett (1958) to embrace the full range of cognitive skills such as thinking and problem-solving, recall, meta-cognition etcetera, as well as manipulative skills long-recognised in organisational psychology, such as negotiation, persuasion, interpersonal and human resource management skills. The acquisition of a skill may be by self-direction (experiential) or by structured training and learning or a by a combination of both, and the degree of efficiency with which it the skill is performed can be observed and evaluated by both quantitative and qualitative changes in skill performance. Qualitative changes can be differentiated from quantitative measures of improved performance and may be indicative better understanding of the task, selection of different responses, variations in technique, and redistribution of attention. In other words, skill performance may reflect deeper (reflective) learning even though the particular skill may be associated on the surface with automatic responses as with motor-skill performance or with administrative functions which have some of the characteristics of motor-skill performance; in which case surface measurement of performance - say in terms of raw output – may not capture the internal efficiency (real resource cost) with which the desired output is achieved. This in turn leads to the conclusion that fundamental to an understanding of the skill-acquisition process and how these might facilitate (or hinder) transfer of learning, is the analyses of the types of learning that are involved. In the next section the relationship between identifying learning by type and instructional framework design will be considered.

5.18 **Types of Learning, Skill Acquisition and Instructional Design**

It has been shown in previous sections of this chapter that both behavioural and cognitive elements of learning can be present in a range of learned behaviours including skill acquisition where *skill* is both narrowly (vocationally-practical) and broadly (cognitive-dominant) conceived. In which case in trying to understand the conditions for realising the potential for transfer of learning across domains, it might be better to think of learning modes as representing a continuum of possibilities each of which shades into the next, rather than the hitherto used dichotomies of *near* and *far* transfer (Cornford, 2002) and *deep* and *surface* learning (Marton and Säljö, 1984). Nevertheless, in approaching issues of instructional design, it remains a norm to frame categories of learning to this end, posited upon the proposition that different types of learning can be associated with different training outcomes: thus the analysis of a task by learning category can be then linked to training design specification (Gagné, 1985).

Gagné, Briggs and Wager (1988) identify five categories of learned capabilities which are presented in the graphic below:

kind of capability	example	function
intellectual skill	<i>use metaphor</i>	<i>component of further learning</i>
cognitive strategy	<i>induction of concept of magnetic field</i>	<i>controls behaviour in learning and thinking</i>
verbal information	<i>water boils at 100°C</i>	<i>directs learning and aids transfer of learning</i>
motor skill	<i>printing letters</i>	<i>mediates motor performance</i>
attitude	<i>preference for listening to music as leisure</i>	<i>modifies individual choices of action</i>

Fig. 5.1 *Categories of learned capabilities:* (Adapted from: Gagné, R M and Briggs, L J and Wager, W W, *Principles of Instructional Design*, 1988, p44, New York: Holt, Rinehart and Winston)

One interpretation of the above schema is that different types of capabilities – ranging from the *intellectual skill* through to the *motor skill* (with *attitude* more properly being associated with motivation rather than with capability) have different learning (or efficiency of learning)

functions. How this schema can be operationalised starts from the assumptions that if the cognitive processes involved in a range of learning activities are distinctively different and consistently so, then the design of training for a range of intended outcomes will vary accordingly. Thus if one conceives of different outcomes for formal educational programmes as distinct from say, practical situations in the workplace, then one has to reflect upon the consequences for resource utilisation in configuring training design. This approach would have relevance to the investigation of placement and academic performance in that the specification of different learning outcomes should aid in the design of the educational program. However one notes at this stage that the above schema takes a very narrow perspective on the prospects and tools for aiding transfer of learning – suggesting as it does that only a surface type of transfer is likely. In the next section the issue of skill performance is considered further in the context of strategies for learning.

5.19 Taxonomies of Skill Performance and Learning Strategies

Skill performance and learning strategies are related, but need not necessarily highly correlated. One need only consider a hypothetical example such as the difference in effort expended by the gifted sportsman and that of his or her peer who has had to strive greatly to attain the same level of performance. However such vivid examples have their more prosaic parallels – the craftsmen who have the same set of secrets of their trade, but who have come by them with differences in the degrees of effort to acquire these. And in the sphere of intellectual acquisitions, there are no less differences in the ease of effort with which one student acquires a high degree of facility compared with another who has to expend a different set of intellectual resources to achieve comparable status and ability. This is no less true when there are no significant interpersonal differences in intrinsic abilities – in which case differences in the resources expended for the same learning outcomes can be associated with differences in the learning strategies (which may be further explained, not by poor choice on the part of one, but by differences in awareness of what is possible). Kylonnen and Shute, (1989) suggest the following: taxonomy of learning strategies which can be associated with differences in skill performances

- i. *rote*: learning by memorising what an instructor says.

- ii. *didactic*: learning by integrating or assimilating a concept taught by an instructor into one's existing knowledge base.
- iii. *practice*: learning occurs as a result of using knowledge or actions repeatedly.
- iv. *analogies*: learning results from inducing a rule or concept by analogy to already known rules for concepts.
- v. *example*: learning results from inducing a rule or concept by observing examples of that rule or concept provided by the instructor.
- vi. *discovery*: learning results from inducing a rule or concept by noting the effects of those rules or concepts based on one's own initiative.

Each of the above categories may give rise to distinctively difference products as measured by skill performance. Patrick (1991) argues that one can classify performance from three perspectives:

- i. Information-processing requirements.
- ii. Ability/aptitude requirements.
- iii. Types of learning.

In terms of the information processing approach, distinctions are made between the cognitive processes that occur during the cycle: *input – processing – output*. However this approach tends to ignore the employment of cognitive strategies in learning (where cognitive strategies “*involve representational capabilities of the student (reading, imagery, speech, writing and drawing), selectional capabilities (attention and intention) and self-directional capabilities (self-programming and self-monitoring)*.” Rigney, 1978, p65)) concentrating instead on structure (Broadbent, 1987). Miller, (1967) has argued for a taxonomy of eight task functions: *purpose; scanning; identification of relevant cues, interpretation of cues; short term memory; long term memory; decision making; problem solving*. All of these served as constraints in either the input cycle or the output cycle. Thus while task performance can be represented as the transformation of information from an input basis to an output one, it is clearly more than that, since given the complexity and heterogeneity of the cognitive elements involved, so much can go awry at any particular point in the process (or information processing cycle).

5.20 Learning Transfer: Task Specific or Strategic Knowledge?

There is strong evidence from the literature on transfer of learning that whenever new tasks are being learned there is a complex interaction of both the learning of task-specific information and finding new methods of applying either previously learned strategic knowledge or of acquiring new strategic knowledge. It is the role of existing strategic knowledge which determines how the specific elements of a task are processed (Holyoak, 1991; Doane et al, 1996; Pennington, Nicolich, and Rahm, 1995); it is this which reveals both differences in learner aptitudes and in the learner's knowledge of what learning strategies are available. Strategic knowledge itself involves a complex process of developing from domain-specific strategies out of generic learning portfolios and in so doing, selecting those which are judged by the learner to be most apposite to the task in hand. This will include the usual set of tools associated with the application of strategic knowledge of learning such as self-regulatory processes including the search for analogies with previous learned tasks or problems, the explicit treatment of the implicit assumptions relating to the solution strategy or expression of the task. In addition the fullest application of strategic thinking to domain-specific learning tasks will include the articulation of rigorous conditions for identifying what might be deemed to be acceptable solutions and the revision of such solutions and further testing of them in the light of what can be termed an iterative process of benchmarking (Gott, 1990). This relates to the problem of transfer in that it is not always clear how one can evaluate the nature and extent of any transfer that has been claimed, in particular where far transfer is likely to be employed. This question of the forms that transfer might take is further considered in the next section.

5.21 Forms of Transfer and Intentional Transfer of Learning

Detterman (1993) has identified four forms into which transfer may fall:

- i. Surface transfer of knowledge with superficial similarities or attributes.
- ii. Specific transfer of domain knowledge to a new situation.
- iii. Deep transfer of theoretical principles or mental models.
- iv. Non-specific transfer of general strategies and metacognitive knowledge.

Ferrari, (1999) draws attention to cases of *intentional transfer* which parallel the four important types of transfer identified by Detterman (1993). Furthermore, according to

Holyoak and Thagard's (1997) *multiconstraint theory*, transfer should always be easier to the extent that three types of constraints are met when the individual seeks to make an analogy.

- i. First, there should be a direct similarity between the new elements involved and his or her prior knowledge.
- ii. Second, consistent structural parallels (conceptual analogies) between the source and target domain should suggest an isomorphism between them.
- iii. Finally, analogical reasoning is guided by the reasoner's goals or purpose (his or her intentions).

However it is recognised that not all of the above conditions will be met – or at least, not all at the same time or under the same conditions of sought-for transfer. Nevertheless both Ferrari (1999) and Holyoak and Thagard (1997) are in agreement that *intention* to transfer, (one could say: *consciousness of the opportunity for transfer*) will increase the probability of transfer being achieved. This aspect in turn links back to the previously considered proposition that designing for transfer should be central to architecture of placement if it is to enhance academic performance (Bourner and Ellerker, 1993, Harvey, Moon & Geall, 1998).

5.22 Professional Action and Workplace Learning: What Kind of Learning?

In the placement much of the learning with which the intern is involved is in terms of either carrying out duties related to the main business activity of the host organisation or as part of a systematic training programme which is aimed at enhancing the student's ability to perform workplace tasks efficiently. This can be characterised variously as *situated learning* or *informal professional practice*, (or at least as paralleling professional development practices).

In some specific cases the learning in the internship will be a compulsory element of a professionally oriented degree programme, part of which will have been designed in conjunction with the relevant professional body – for example some programmes in real estate management which come under the auspices of the Royal Institute of Chartered Surveyors (RICS); however in most internships within undergraduate programmes this will not be the case and informal training and learning will be the norm. Eraut (2000), in the context of examining what is involved in professional practice and learning in the workplace focuses upon what is termed *non-formal learning* which it is argued involves:

- i. Implicit learning.

- ii. Reactive on-the-spot learning.
- iii. Deliberative learning.

Eraut (2000) argues that deliberative learning is over-emphasised in non-formal learning, and that internships will tend to have a pragmatic mixture of learning which is either reactive and driven by events which while themselves may be unstructured, such events structure much of the learning which is occasioned by the internship. Such learning is also to a degree implicit – in that it only becomes salient when it is faulty. On the other hand, deliberative learning, either as part of a structured training scheme within the programme, or as a conscious element of the student's behaviour and responses to changing circumstances and novel situations is less likely to be a major component of such learning in the professional internship. According to Eraut, professional actions and competencies involve three types of tacit knowledge are:

- i. Tacit understanding of people and situations.
- ii. Routinised actions.
- iii. The tacit rules that underpin intuitive decision-making.

Upon this base of implicit knowledge are posited professional processes, the effectiveness of which determine the degree of efficiency or professional competency of the actor, involving sequences of routinised action punctuated by rapid intuitive decisions based on tacit understanding of the situation. The types of processes involved can be characterised thus:

- i. Interpreting the situation,
- ii. Making decisions,
- iii. Overt activity.
- iv. Metacognition.

The cognitive modes which underpin the above characterisation are given as, *intuitive*, *analytic* and *deliberative*, with distribution between these modes a function of time, experience and complexity. Where rapid action dominates, periods of deliberation are needed to maintain critical control. Finally the role of both formal and informal social knowledge is discussed; and it is argued that situated learning often leads not to local conformity but to greater individual variation as people's careers take them through a series of different contexts. Eraut (1994) subscribes to two parallel types of knowledge. *propositional* and *process* knowledge; the former also being referred to as *codified knowledge*, (or *public*

knowledge, in the sense that it is publicly available, has wide applicability and is capable of being transmitted through such as formal discipline-based university courses). *Process knowledge* is characterised as consisting of “*knowing how to conduct the various processes that contribute to professional action*”(Eraut, 1994, p107). By the above distinction, Eraut (2000) provides one possible schema for thinking about the distinction between undergraduate learning activity in the academic domain and that of learning in the placement domain – the latter having perhaps more of the attributes of learning occasioned by professional action.

5.23 Training for Transfer: Cornford’s (2002) Model

Transfer of learning can be defined in various ways (see 5.1 above): for example, it involves the influence of previous experiences on the performance or learning of new skills and can be in principle measured as any gain (or loss) in the capability for performance on one task as a result of practice on another (Schmidt and Lee 1999). However Cornford (2002) brings another perspective to the analysis of transfer of learning by focussing initially on the distinction between *near* and *far* transfer (see 5.2 above; Singley & Anderson, 1989; Detterman, 1993; Cox, 1997). *Near transfer* involves the application of skill and knowledge to situations that do not differ too significantly from the original examples in learning. *Far transfer* involves the application of initial learning in ways that are not obvious and substantially different from the original learning. Cornford (2002) argues that transfer of learning is a complex set of problems involving all aspects of previous learning and training as well as the issue of application to similar and different contexts (the allusion here is to *near* and *far* transfer). In setting out his model Cornford proposes the set of conditions under which ultimately one might reasonably expect positive transfer of learning. The main features of Cornford’s analysis are:

- i. Transfer is not a passive, naturally occurring process (Stokes and Baer, 1977); there is a need to train specifically for transfer, which implies that the trainer and the student need to plan for effective transfer at the initial training stage.
- ii. Initial problem recognition and definition and conscious awareness of what is meant by transfer is a prerequisite for transfer to be enabled. Trainers need to construct the circumstances or context for relevant learning for transfer to occur,

but, “*ultimately effective transfer is dependent upon the individual making conscious decisions about the appropriateness of applying past learning*” (Cornford, 2000, p89).

- iii. Cornford proposes that “*Conscious awareness relates quite specifically to stimulus recognition; that is the identification of an appropriate situation to apply specific knowledge and skills, rather than some other knowledge existing in the individual’s repertoire of previous learning.*” (Cornford, 2000, p89).
- iv. Transfer of learning cannot be understood as a set of homogenous possibilities. There is a need to distinguish between different forms of transfer - different types of transfer require different approaches in teaching and training to increase the probability of positive transfer of the requisite type. Moreover, it is likely that techniques for inducing transfer may also have to be varied dependent upon individual differences of those from whom transfer is being developed. (Compare with Gagné’s scheme, 5.15 above, Gagné, Briggs and Wager, 1988; Gagné, 1985).
- v. There are a range of different strategies and principles involved with teaching to achieve a particular form of transfer. No single approach to teaching or training for transfer is likely to be effective for all individuals or in all contexts (Gage & Berliner, 1992; Cox, 1997, Cornford, 2002).
- vi. *Positive transfer* is only likely to occur successfully after previous, in-depth learning which will have involved the effective acquisition of underpinning facts and concepts, and a comprehensive understanding of most of the relevant constituent elements. When this has been allied with general strategic knowledge and specialised domain knowledge then positive transfer will permit application to a different context – so-called *far transfer* (Perkins and Salomon, 1989).

Cornford (2002) equates near and far transfer with Billett’s (1998) concepts of *routine* and *non-routine* transfer. But implicit in Billett’s terminology is the assumption that some transfer will occur almost automatically; while the explicit argument of Cornford is that no transfer of learning can be assumed to occur unless the groundwork has been prepared for it, and that applies equally to near transfer as to far transfer: “*Successfully attaining near transfer itself is enough of a challenge*” (Cornford, 2002, p89).

5.24 Vocationalisation and Training for Transfer

In specifically relating the problem of transfer to that of complex problem-solving (essentially a question of far transfer), Cornford is laying the foundations for the analysis of transfer in the context of increased vocationalisation of the HE sector. The argument for increased access to, and vocationalisation of the sector, is that having identified the transferable and other skills deemed to be necessary for the transformation of the labour force and in turn for the transformation of society and economy by the accompanying enhancement of creativity and competitiveness necessary for success in global markets, it will be the changing role of universities with respect to effective transfer of learning which will be the catalyst for success. But this is precisely the most difficult form of transfer to achieve through training – not helped by the fact that *“the existing levels of research and theory in psychology do not as yet provide sound guidelines for training in this form(...)* .. Hence, many of the expectations of business and political leaders are frankly unrealistic in relation to far transfer” (Cornford, 2002, p90). Moreover, the issue which is at the centre of this investigation is in an important sense even more complex than that process described above – the training for transfer will not only have to involve training for the transfer of learning from the academic to the placement domain, but also from the placement domain to the academic.

5.25 Training for Transfer: Yelon’s (1992) MASS Model

Yelon (1992) emphasises the importance of cognitive approaches to teaching a skill and making trainees aware of its use at appropriate times. The approach advocated moves well beyond mere consciousness-raising to the use of proven techniques and strategies in training. Attempts to match training conditions to those encountered in the real world of work are important. Equally as important are explicitly teaching cognitive procedures to ensure effective learning and the development of sophisticated schemas in memory. Cornford’s (2002) approach to the transfer process (5.24 above) has strong elements which lie in the behaviourist tradition and is recognised by Cornford as being of more relevance to near transfer rather than those problems associated with far transfer and the promotion of complex problem solving skills across domains. Yelon’s (1992) MASS Model tends towards a cognitive approach with an admixture of elements of social approaches to learning (e.g. Pea,

1987) which emphasise the importance of the social context and the role of the teacher or trainer - a perspective which has elements in accord with Cornford in terms of the recognition of the need for training for transfer, as well as with those authors who stress the importance of taking account of context of learning (e.g. Ramsden, 1992, Entwistle and Smith, 2002). Yelon's (1992) Acronym MASS, stands for *Motivation, Awareness, Skill* and *Support*. Taking each in turn:

- i. *Motivation*. For students to learn and to apply new behaviour they need to be motivated before, during and after training. In turn the precursors for motivation will be dependent upon a variety of factors including
 - a) The organisation identifies high-priority needs for the skills that are to be taught and transferred and allocates resources towards these ends.
 - b) The trainees (interns) identify the needs of the organisation with their own set of priorities, and are open to change.
 - c) The motivational forces for training for change must exceed the pressure from organisational inertia which will hinder the acquisition of new knowledge and skills, and the introduction of new processes.
 - d) Trainees (interns) believe that they can overcome internal resistance to such transfer and be able to apply the new skills.
 - e) Trainees (and others in the organisation) perceive that the transferred learning will make a significant difference to their own experiences, status and effectiveness, as well as to those of the organisation.
- ii. *Awareness*. Trainees must be aware of the general value of the new skill and must be confident as to when to use it. The onus is then on trainers to assess the level of awareness among trainees; this can be done by examining the extent to which the trainee is aware of the actions required to meet the organisation's high priority needs; the level of awareness as to why past performance was not successful; awareness by the student as to what ideas and skills are needed to learn in order to change performance; by intern awareness of when and where to use the ideas and skills to be learned; high awareness as to the cues denoting the time to use certain ideas and skills; and awareness as to why they are to use certain ideas at certain times. (Such questions are in the realm of behavioural

psychology in that they involve matters concerning stimulus recognition in the transfer of knowledge; but these are seen by Yelon as being subsidiary to the focusing upon understanding and appropriateness of skill usage, and thus the primacy of teaching principles (cognitive processes) in order to achieve successful transfer of learning).

iii. *Skill*: Yelon emphasises the importance of cognitive approaches to teaching skills and making trainees aware of their use at appropriate times. This is advocated through the explicit teaching of cognitive procedures to ensure effective learning and the development of sophisticated schemas in memory.

“Thus trainees should learn to use effective memory enhancing procedures: mnemonics, frequent distributed practice, principle-based rules, training in phases, practice to autonomasticity, talking and writing about what they have learned and learning only a few, well-illustrated, important and well-organized ideas at one time ... Trainees should also learn to use these adaptation procedures: troubleshooting, applying principles, thinking analogically, solving problems creatively, monitoring and improving their own performance, and giving themselves permission to vary their applications ...” (Yelon, 1992, p16).

What all of this indicates is that trainers/teachers need to have an extensive repertoire of skills and knowledge about effective learning procedures and how to teach learning-to-learn and problem solving approaches.

iv. *Support*. Support in the work environment, so that transfer of skills that have been learned and trained for, becomes easier and assisted, is recognised by Yelon as of great importance. Yelon’s recommendations include

- a) Intervention in both training and the workplace to ensure that trainees encounter a training culture, which will help and not hinder. As Yelon states (p. 17): *‘All staff must learn not to discourage transfer’*. These staff include top leaders, line supervisors and co-workers, since trainees need time and opportunity to perform and perfect skills through practice and feedback.
- b) Mentoring and supervision of novices. More experienced workers are starting to be recognised as of great importance if there are to be superior learning and performance in the workplace (Cornford and Beven, 1999).

5.26 Study Abroad and Transfer of Learning: Placement By Another Name or a Special Case?

As well as formal periods of placement from which undergraduates might anticipate a range of benefits not usually provided for in the HE institution, study abroad periods offer undergraduates opportunities which are also expected to provide benefits supplementary to those gained in the formal academic setting of the student's institution. These might be as part of a language programme or more frequently in the case of UK and EU students as part of an exchange programmes under *Erasmus* (or the wider-reaching *Socrates* programme). Teichler (2004) notes that since the mid-1990s, more than 10% of European Union graduates has experience of study beyond their home HE system, with 5% of EU graduates being awarded a degree by an HE institution outside of their home country. The range of benefits anticipated from such study-abroad can be categorised under four headings: (Teichler, 2004): *cultural, linguistic, professional* and *academic*. In relation to the *academic* category of anticipated gains from study abroad periods, this is not equivalent to the central subject of the thesis in that it refers to the learning experience in another country – not the enhancement of academic performance as traditionally measured. However the question of learning transfer is equally pertinent to study abroad as it is to work experience.

5.26.1 Learning transfer in studying abroad There is an expectation in the Erasmus (and broader Socrates) framework that there will be a strong element of co-curriculum integration, such that participating students should be able to study something that is similar to their programme in their domestic institution; or alternatively, be able to study something which is equally valued by their domestic institution in lieu of whatever it is they have foregone by opting to spend a period of study abroad. As Teichler (2004) frames it: the content and epistemological foundations are expected to be more similar than dissimilar as between home institution and host, in which case the conditions for transfer of learning from study abroad to that of the student's home institution are likely to be present. However Teichler finds that there is a lack of congruence between the two poles which inform student learning in the case of study abroad schemes, with the main differences being represented by:

- i. Students take significantly fewer classes abroad than they do in their home institution;

- ii. Students report that about half the courses are not of a similar academic level as the programme at home: about 30% considered more demanding and about 20% less demanding;
- iii. Students take many courses which are very different from those at home as far as the topics and methods are concerned.

In the context of this thesis, one acknowledges that as with work placement, so with study abroad – students elect to take work placement or study abroad for a broad range of reasons, of which enhanced academic learning on return to the home institution is unlikely to be a major reason for their choice. In the case of study abroad the evidence suggests that it is not learning transfer narrowly conceived which motivates the decision to go beyond the confines of the home institution and country; rather it is set of loosely related reasons (Teichler, 2004) among which are: to broaden understanding of different cultures and systems of learning, as well as to access courses / specialisms which might not be available in the home institution, and to generally enrich the learning experience with all of the associated benefits which might be expected to accrue to the curriculum vita of the student who has taken what is, in comparison with remaining in the home institution, a step fraught with risk of many types. Thus it can be seen that study abroad tends to have a less formal structure than placements which are integrated into undergraduate programmes of studies; in which case the scope and nature of transfer of learning as between formal placements as considered in the thesis is likely to be significantly different from any transfer of learning which arises out of study abroad programmes.

5.26.2 Evidence on the benefits of study abroad. In terms of the reported benefits of the study abroad period, (Oppen et al 1990; Teichler 2004; Hadis 2005) there is strong support for those benefits associated with the cultural experience, foreign language learning and the expected professional value of the temporary study period abroad. In terms of formal learning transfer to domestic academic performance the evidence is largely impressionistic and should be treated with caution in the absence of empirical studies which go beyond student and teacher surveys. In the context of the thesis which is being developed herein and whose central propositions will emerge as testable hypotheses in Chapter 9, insofar as the study abroad period can be represented as an equivalence to the work placement, one would

not anticipate significant academic gains on return to the domestic academic environment unless there was a close matching of content, purpose and methods of evaluation as between the domestic programme of studies and that of the host institution. It is precisely in this regard that the study abroad period is at variance with the domestic arrangements of the placing institution (Teichler, 2004).

5.27 Transfer of Learning: Summary

Having considered theories of learning in Chapter 4, it was next necessary to consider issues relating to transfer of learning given that it is central to the processes being investigated in this thesis. It was shown through various definitions that a common element in transfer of learning is that it involves the degree to which prior learning may influence the performance of tasks and that these may bear a close relationship to the prior learning situation, or may have only a tenuous relationship to the prior learning situation and experience. Transfer of learning was then considered in terms of *near transfer* and *far transfer*. It was shown that *near transfer* has a strong association with the behaviourist analysis of learning behaviour, and that this in turn has influenced traditional approaches to vocational training design such as that in pre-modern apprenticeships - reflecting the belief that for effective transfer of learning the learning situation and the transfer situation were to be close in character if not fully contiguous (the *on-the-job-training* tradition). However as the definition of skills became broader and moved away from the narrow association with manual crafts and processes, so too did the analysis of learning and transfer become more complex than that offered by the behaviourist tradition. In part this reflects an evidence base which suggests that closeness of stimulus conditions between the training situation and the transfer situation have rarely promoted far-reaching transfer. This has led in turn to a rise in the influence of cognitive theories of learning in the sphere of *near transfer* (as well as its more natural domain of considerations of *far transfer* of learning, a mode associated in the literature with deep learning). Questioning of the extent to which it is legitimate to classify transfer of learning into *near* and *far transfer* led in turn to considerations of the extent to which learning in one context – say, a university – is likely to be qualitatively different from that in another context – say the workplace of the undergraduate intern. Employing the concepts of *high road transfer* and *low road transfer* (analogous in some respects to *far* and *near transfer*

respectively), it was suggested that much of the learning in HE is intended to instil and employ skills and cognitive attributes which favour metacognition and reflective practices, while much of the learning in the workplace is a subsidiary activity of the host organisation and is primarily in the form of surface learning and near transfer (which is associated with low road transfer). Next an attempt was made to characterise the nature of the transfer which is at the core of this thesis. It was suggested that while much of the transfer of learning between the two domains of the university and that of the workplace should ideally be in the form of far (or high road) transfer, the situation is complicated by the two-way nature of such transfer and by the fact that a significant proportion of learning in the workplace can be characterised as surface learning which is associated with low-road or near transfer).

Terming this as *mixed* transfer, it was then considered as to how such mixed transfer of learning might be facilitated between these disparate domains; discussion of designing for transfer led logically to the nature and role of the architecture of placement in this process. Additionally it was proposed that one of the problems contextually for transfer of learning is that there are asymmetrical expectations in that while the university is expected to supply an intern who is well-equipped and prepared to contribute to the goals of the host organisation, the host is not expected to enhance the academic performance of the undergraduate when he or she returns to studies. In examining some of the evidence on transfer of learning, it was found that most of it is concerned with the transfer of motor skills such as those of industrial plant operators or of people engaged in formal sporting activities. In some cases these studies involve motor-skill transference which also are held to have a high intellectual content provided by the context or environment within which the transfer is expected to be realised – for example that of aircraft pilots, or surgeons. In most of these studies - even where there was not strong knowledge on significant transfer of learning between domains - where there was evidence it tended to suggest that successful transfer of learning involved some strategic knowledge of learning techniques if far transfer was to be affected. Next the issue of the endurance rate of transfer was considered (the distinction between short- and long-term transfer). With implications for designing for transfer and architecture of the placement, it was found that some studies indicated that where strategies were introduced at the training stage to facilitate performance, these could have a negative effect on retention for learning-related tasks. Conversely, training strategies whose design principles were aimed at slowing

the rate of learning during the training phase had a positive impact on transfer and retention. These results suggest that while the architecture of placement can be crucial for facilitating transfer, it must not be thought that the requisite design features must of necessity be aiming at making learning easier for the student in placement. By considering the nature of professional action in the context of vocational training, and through consideration of models of transfer of learning, it was concluded that while the architecture of the internship will be a vital element in creating the potential for transfer of learning (in both directions), training for transfer of learning is also required if positive transfer is to take place in the direction of workplace domain (internship) to the academic domain. Finally, the case of study abroad as an alternative form of placement was considered in section 5.26. It was shown that the evidence is not strongly supportive of the view that this leads to positive learning transfer of the type that is conventionally and predominantly measured in the HE assessment system. This it was suggested, can in part be understood in terms of the fact that there is often no close matching of the study abroad experience with that of the academic regime in the placing institution. This is not to denigrate the value of the study abroad potential; rather it is reflective of a different motivational aspect which drives the student to seek a place abroad for study as opposed to remaining at home and taking work placement. In the next chapter the issue of motivation – highlighted in 5.25 above – will be considered in greater detail.

Chapter 6 Motivation, Placement and Performance

6.1 Motivation and Placement: Introduction

It has been seen at several junctures in this thesis that motivation has several roles in the placement arena and thus is likely to inform the processes of transfer of learning. For example motivation enters positively into the decision to undertake placement; the student aspires to the benefits commonly associated with placement (See section 1.5). The student may elect to proceed at the end of Year Two directly to Final Degree Year studies; however the choice of placement may have been motivated by the expectation of a certain type of return such as positive transfer of learning upon return to studies, or the motivation afforded by the opportunity to earn an income while receiving another range of benefits from placement, or be motivated by the expectation of increased employability on graduation which has been associated in the literature with placement (Bowes and Harvey, 1999). In addition, as has been seen in Chapter 5, the issue of transfer of learning and training for transfer of learning is bound up with issues of motivation (e.g. Yelon, 1992; see 5.25 above). In this chapter the nature of motivation – theories of motivation - and how it might impact upon placement and transfer of learning will be considered in some greater depth. And while the broader research on student motivation cited in this chapter is not specifically linked to the effects of the internship on student performance – being in the main either concerned with general issues of student motivation, or the factors which influence motivation in the workplace – it will be shown how these different perspectives might be synthesised to shed light on the effect of the internship on learning transfer. As part of this synthesis, it will also be indicated how one might measure this effect, and how this in turn should lead to new directions in research into student motivation in general, and more particularly, into the as yet uncharted influences of the internship on motivation in the academic domain. For example, little is known of the extent to which individual interns might become disillusioned towards their programmes of studies and even towards their intended career as a result of their internship experience – which need not be a product of weak architecture, but rather a product of experiences which do not meet expectations. In which case indicative lines of research inquiry would include the extent to which interns in the post-internship period

change the direction of their studies and the extent to which interns do not return to complete studies, in conjunction with attitudinal studies.

6.2 Definitions and Sources of Motivation: Observing the Unobservable

There are various approaches to defining motivation, some of which are considered here. Motivation can be defined as “*the internal state of an organism which drives it to action.*” (Reber, 1995). Alternatively *motivation* may be thought of as a process or series of processes that starts, guides and sustains a goal-oriented sequence of behaviours (Taylor et al. 1982). What most definitions have in common is of a concept, or state of being, which cannot be directly observed; rather it is inferred from what is observed in the behaviour of fellow humans. From this perspective then, *motivation* can be regarded as an intervening variable that helps understanding of the processes involved in an agent moving from one given state to an end state which can be characterised as having been goal-oriented. Thus it is to be understood as a hypothetical entity in the nature of an intervening variable whose existence can only be surmised by considering the difference between the initial state of an organism and another state which has arisen out of a change in behaviour. In an explicitly behavioural formulation, motivation can be regarded as an intervening variable which helps to explain the relationship between environmental stimuli and behavioural responses, and which allows the observer to infer its existence and nature (Bernstein et al, 1997). However it will be seen in below that the behavioural perspective is not the only one that can be used to help understand motivation. In addition, given the many perspectives and definitions of motivation – too many to be considered at any length in this work - the approach taken in the next section will be to approach the idea of motivation obliquely and by reference to some of the main theories or schools of thought. But before that a brief consideration will be taken of the main sources or categories of motivation as usually given in the literature:

- i. *Biological* (Tinbergen, 1989): the need to meet minimum conditions for continued existence – driven by hunger, by the sex drive.
- ii. *Emotional*: panic, fear, anger, love, hatred, jealousy etc. (Izard, 1993)
- iii. *Cognitive*: people behave in a certain way because of their perceptions of the world and others; because of their beliefs and their views of their own abilities, and their anticipation as to how others will respond. (Weiner 1993).

- iv. *Social*: reactions to parents, friends, relatives, teachers, media influences, peer pressure etcetera (Baumeister and Leary, 1995).

Drawing from these different strands of the roots of motivations, has emerged various theories of motivation. Some of these will be considered in the next section.

6.3 Theories of Motivation

Theories of motivation include:

- i. *Instinct theory*
- ii. *Drive reduction theory*
- iii. *Arousal theory*
- iv. *Incentive theory*
- v. *Achievement motivation*

Considering each of these in turn.

Instinct theory: associated with evolutionary psychology (or general evolutionary/ biological theories of adaptive human behaviour, for example, Cosmides and Tooby, 1997), instinct theory explains motivation in terms of human instincts being automatic, involuntary and unlearned behaviour patterns which are consistently released by particular stimuli (Tinbergen, 1989). In relation to evolutionary theories of human behaviour *instinct theory* suggests that instinctive behaviour has evolved because it is adaptive for promoting the survival of the organism; thus behaviours such as *helping, aggression, selection of mates*, are motivated by inborn factors which enable the organism to pass on its genes to the next generation.

Drive Reduction Theory explains motivation as arising out of imbalances in homeostasis creating a need or biological requirement, for well-being. The brain responds by creating a psychological state called *drive* - a feeling of arousal that prompts an organism to act to restore the balance and reduce the drive (Hull, 1943). Unlike instinct theory, drive reduction theory accommodates the importance of *learning* on motivation by distinguishing between: *primary* drives - stemming from biological needs (also termed *unlearned* drives), and *secondary* drives. Once learned, a secondary drive motivates us to act as if one has an unmet

basic need. For example, as one learns to associate having money with satisfying primary drives (food, shelter etc.) having money becomes a secondary drive; thus shortage of money may motivate many behaviours. By recognising primary and secondary drives, *drive reduction theory* can account for a wider range of behaviours than *instinct theory*.

Arousal Theory: some behaviours at the extreme end of the spectrum of human activities do not appear to reduce any known drives. For example, sky-diving and mountain climbing appear to increase arousal (Rozin and Shenker, 1989). Arousal theory explains motivation in terms of the *regulation* of arousal. The level of arousal can be measured by, for example, the level of electrical activity in the brain, skin conductivity, by heartbeat, by muscle tension and so on. The arousal theory of motivation suggests that people are motivated to behave in ways that keep them at their optimal level of arousal (Zuckerman, 1984). Generally people will try and increase arousal when it is too low, and decrease it when it is too high: they seek excitement when bored; relaxation when over-aroused, according to this theory of motivation. Both over and under arousal can be harmful to performance – for example it has been estimated that in battle about 75% of soldiers may be so aroused that they never fire their weapons (Marshall, 1947). Aiello and Kolb, (1995), suggest that the impact of other people on performance depends upon whether the task is easy or difficult - thus when performing an easy task such as cycling, increased arousal due to the presence of others may lead to faster performance; one reason being that our awareness of being watched and evaluated produces apprehension thus increasing emotional arousal (Penner and Craiger, 1992).

Incentive theory: this approach to explaining motivation emphasise the role of environmental stimuli that can motivate behaviour by pulling people towards them or pushing them away. People act to obtain positive incentives and avoid negative ones. Differences in behaviour from one person to another or from one situation to another can be traced to these incentives and the value a person places upon them. If one expects a behaviour such as buying a lottery ticket to lead to a valued outcome - winning money - one will engage in that behaviour (Bernstein et al, 1997). The value of any incentive is influenced by biological and cognitive factors; thus food will be a motivator when one is hungry; but a lottery outcome may be

influenced by knowledge of odds against likely success (cognitive factors); in which case rational expectations should come to bear over time, and the behaviour of the lottery ticket-holder who persists in the behaviour cannot be explained by incentive theory.

Achievement motivation: (Bernstein et al 1997) in this approach there are two main factors in motivation: *extrinsic motivation* – the desire for an external reward such as money; and *intrinsic motivation* – the desire to achieve internal satisfaction (see also Taylor, 1983). This latter category is identified with the so-called *need for achievement motivation* (Murray, 1938). People with a high need for achievement, seek to master tasks - sports, intellectual pursuits, business, artistic and so on - and such people obtain an intense satisfaction from so doing. Achievement motivation tends to be learned in early childhood, especially from parents, although such motivation can be increased at a later stage of development by systematic *motivational goal training*. For example, college students (McClelland, 1985) were found to be able to increase their drive and motivation by:

- i. fantasising about setting difficult goals;
- ii. breaking task achievement into small manageable steps;
- iii. fantasising about working hard and failing but not being discouraged by doing so;
- iv. by imagining feeling elated at success in the goals.

(In the above study it was noted that as a result of these techniques for increasing drive and motivation, academic success improved, suggesting an increase in their achievement motivation, McClelland, 1985).

6.4 Motivation, Placement and Performance

In covering the range of theories of motivation above, one has to concede that the nature and role of motivation involved in the placement and ultimately in any processes of learning transfer may vary by student and placement itself. However that is not to argue that it would be fruitless to factor-in motivation in attempting to relate this to architecture of placement and learning transfer – rather it is to argue that for the purposes of this investigation the term *motivation* refers to a complex set of characteristics, which no matter the intrinsic quality of the motivating principle at work, will be reflected in a propensity to greater effort in the case

of high motivation, and a propensity for lesser effort in the case of low motivation; *ceteris paribus* this in turn can be assumed to manifest itself in the propensity to either higher potential for learning transfer or lower potential for learning transfer. And it is argued that no matter the ultimate explanation which may underpin the motivating factors in both seeking to undertake placement and in terms of those factors which may influence academic performance upon return to studies post-placement, motivation has a central role.

Consequently one would expect that in formulating an architecture for placement which has one of its central goals as enhanced academic performance, one needs to take account of factors acting upon motivation; alternatively, if as a result of an empirical investigation it is found that such an architecture does not elicit the anticipated positive transfer of learning, part of any explanation should at a minimum consider the impact of motivation.

6.5 Motivation, Placement and Performance: Student Expectations

The student who elects to undertake placement might be motivated by the belief that it will enhance academic performance upon return; in which case it could be the difference between achieving the Bachelor Award with or without Distinction, or the difference between a higher Honours classification and a lower one. However there is more to the treatment of motivation in the placement than enumerating a set of positive expected outcomes which might only provide an insight into the initiating process – the positive choice to undertake placement. For example it could be important to understand what happens to motivation during placement. And this in turn can have two aspects for consideration:

- i. motivation towards the placement itself during the placement;
- ii. motivation towards academic performance on return from placement;
- iii. motivation towards a career in the subject-area (or sector) itself.

It is conceivable, given the complex nature of motivation and its impact on behaviours, that a failure to achieve enhanced academic attainment upon return to studies post-placement would be reflective of some diminution of motivation brought about by the period of placement which is manifested upon return to studies; that perhaps in the differing environments - the workplace in relation to the classroom – something happens to motivation. Does it become different-centred, is there a loss of focus, a change in values?

Alternatively, if placement is associated with enhanced academic achievement upon return to

studies this might be explicable in terms of increased motivation. In the light of these speculative propositions on the possible linkages between motivation and the internship – before, during and post-internship – one can see emerging a framework for a research model which would be concerned with measuring motivation in these three states (or measuring rates of change of motivation over time) and which attempts to test for associations between these and a measure of performance (such as academic attainment). These are matters which will be returned to in relation to the discussion of the results (see Chapter 11), and which will feature in 12.3 (*Further Research Directions*). Meantime to go some way to understanding these issues one needs to look at motivation in the workplace.

6.6 Motivation: The Workplace and the Academic Domain

To what extent might the student experience a different type of motivation between that driving performance in the academic domain, and that governing task performance in the placement domain? Low motivation in the place of work has been found to be associated with feelings of having little or no control over the work environment (Rosen, 1991).

Workers tend to be more satisfied and productive if:

- i. They are encouraged to participate in decisions about how work should be done;
- ii. They are given problems to solve without being told how to solve them;
- iii. They are taught more than one skill;
- iv. They are given individual responsibility;
- v. They receive public recognition for performing well (and not just money – Rosen, 1991).

Relating this to what the student experience might be in the placement one can make the following set of observations:

- a) The student in the workplace is a transient being in relation to the host organisation.
- b) In the placement an alternative (and perhaps competing) set of motivating factors compared with the initiating motivations for placement, will define the overall motivational ambience.

Taken together, the student in placement perhaps perceives herself / himself to be alienated in the workplace, at a distance removed from both sets of central motivating forces – those

defining performance in the academic domain, and those which define the operating ethos and principles in the workplace as well as those defining effective functionality. The intern is in a sense a being in suspension between two distinctively different worlds – the host organisation and the university - with distinctively different value and rewards systems. In the workplace the core values will include commitment to the goals of the organisation and acceptance of the reward system. For the transient intern it may be difficult to identify wholly with these core values, while the degree of discretion in the conduct of functions may be limited if the architecture of the placement does not allow for it. In the university the core values might be perceived by the student as examination success (related to issues of the “hidden curriculum”, e.g. Snyder, 1971; Miller and Parlett, 1974) and the reward system similarly is seen as the same. One of the questions which this thesis attempts to answer is what happens to motivation for the placement student in both the workplace and on return to studies. Might there be a de-motivation of the student that is manifested on return to studies, and which leads to a failure to reap the potential benefit of enhanced academic achievement? From this perspective, motivation is an invisible intervening variable which impacts upon the learning processes of the placement, and whose sign might be inferred from academic performance post-placement. (Additionally, some sense of what happens to motivation may be assessed by the direct method of survey – 11.6.4.3; also Appendix 12). The question which follows from this is whether the motivational variable has a positive or negative impact, the evidence for which will be in terms of whether the *transfer of learning* between the workplace and the university is positive, neutral or even negative?

6.7 Motivation and Expectations

Motivation enters the placement process in the decision of the student to seek placement, (or indeed in the decision not to take placement and to opt for continuing in the academic programme) and the nature of this motivation will depend in part upon the expected outcomes from the placement. In terms of post-placement impact, and the possibility that on return to studies there has been a diminution of motivation in relation to the overall programme, the general value of the placement as judged by the student will be a function of the *expected value* of the placement and the *realised value*. As a general proposition one can say that the greater the difference between expected value and realised value (what can be

termed *the outcome-expectations gap*), the greater the scope for there to have been a change in the motivational force. If the expected value is greater than the realised value, one would expect that the scope for a diminution of motivation will be greater in proportion to the outcome-expectations gap. Conversely, if the realised value of the placement exceeds the expected value then there is an increased probability that the motivation of the student towards the course in general will be enhanced. In turn, as a working hypothesis, one can propose that an increase in motivation will create the conditions for positive learning transfer (in both directions), while a diminution of motivation will be reflected in an increased probability of negative learning transfer from the placement to the academic domain. As to what the *outcome-expectations gap* is for any set of students (or individual student) for any given internship, that is a matter for empirical research, since in principle it should be possible to measure motivation at the different stages in the placement process.

6.8 Motivation and Transfer of Learning

Yelon, 1992 has placed at the centre of his (MASS) model of transfer of learning, the role of motivation (see section 5.25 above). In relation to transfer of learning, he argues that for students to learn and to apply new behaviour they need to be motivated before, during and after training. Motivation will be strong if there is a perceived need within the organisation for the learning which is to be taught, and that this has a manifestly real and high organisational priority. In turn, the motivation is reinforced if the student perceive this organisational need as one of their high priority needs. Additionally, within any organisation there are forces of conservatism which oppose radical change; which counter learning initiatives and the application of new techniques, skills and knowledge. This has to be exceeded by the motivation of interns, and they in turn have to believe that they will be able to counter the internal resistance to new ideas and techniques, and be able to successfully apply the new knowledge. Finally if the student believes that the ideas and skills to be learned will make a significant difference to themselves and to the organisation, and the trainees believe that they will appear to be more effective workers by applying these ideas and skills, then the motivational effect will be strong (Yelon, 1992). However, Yelon's model, like other models in the literature, is concerned with transfer of learning from the formal teaching (academic) domain to the workplace domain. It does not explicitly address

the issue of transfer of learning from the workplace to the academic. Nevertheless, there is no reason to suppose that the principles proposed by Yelon should not be applicable *pari passu* to facilitating transfer of learning from the workplace to the academic domain. The type of changes necessary to the Yelon model would be ones which affect the architecture of the placement. Whether they in fact do operate in this manner (in either case) is one which should in principle be empirically testable.

6.9 The Nature and Development of Student Motivation

Thus far the issue of student motivation has been largely a consideration of its place in the placement process – in the decision to undertake placement, in the performance of functions within the placement and the potential for motivation to change between the placement and return to studies. However, since the research question is closely bound to the factors which influence academic performance upon return to studies post-placement, it would be a major omission to neglect the issue of motivation of students in relation to their academic studies. The level and nature of motivation upon return post-placement will influence the extent to which there is learning transfer from the work domain to the academic. It has been seen in the treatment of theories of learning and of learning transfer (Chapter 4 and 5) that students can be characterised as adopting either surface learning approaches or deep learning approaches (Marton and Säljö, 1984). While this characterisation has proved to be useful in understanding learning outcomes, it will also be of some value to consider what factors are at work in relation to the attitude that students bring to their programmes of studies – in other words, what is it that motivates students and which in turn may inform their adoption of one or another approaches to learning? Jacobs and Newstead (2000) looked at a broader question of student motivation as a function of (among other things) time. Specifically they were interested in what factors were initial motivators in student choice of courses, and how their motivation changes over the duration of their programme of studies. In characterising motivators, they identified those which could be termed *subject specific* and those which could be termed *generic* motivators. Thus they were able to identify students who were largely motivated by the discipline itself (*Psychology*); another type of student could be characterised as being primarily motivated by the acquisition of more general skills and experiences. However the strength of both types of motivators was not invariable: it was

found that subject-specific motivation tended to exert declining influence over the duration of the programme (and in particular in Year Two) on students who had initially identified with it; while generic motivators (as identified by reference to research methodology, and other transferable skills and experiences) showed a marked increase over the programme, especially in the final year. This particular study has pertinence to the preceding analysis of the relationship between placement, the placement architecture and the academic domain, in that it has already been identified that one of the potential problems in facilitating transfer of learning between these domains may be rooted in the uneven match between what it is that is being measured as having been transferred. To put it another way, is the learning that takes place in the placement best characterised as being largely generic, while that in the academic (and what is being mostly measured in that domain) tends to be subject specific? If the answer is in the positive, then no existing theory of educational motivation takes adequate account of these differences.

6.10 Motivation, Transfer of Learning and Placement: Summary

This chapter has considered in some depth the nature of theories of motivation in general and has attempted to examine how motivation might be related to the issues of placement and academic performance. It was noted that the decision to undertake placement can be perceived as being a visible manifestation of a particular set of motivational factors which embrace the range of benefits which are commonly held to accompany placement experience – the student chooses to undertake placement in the expectation of a set of well defined benefits. Amongst these might be the expectation of enhanced academic performance upon return to studies. However, such is the complexity of motivation, and such is the divergence between the set of initiating motivational factors which were salient in the placement decision and the dominant ambient motivational set in the host organisation, that there is ample scope for motivation to be unpredictable in terms of how it informs the students' attitude and performance upon return to studies: there may be a complex interaction between these motivational sets which will be manifested in performance differences, which may or may not be obviated by a placement architecture which tries to take account of this interaction to facilitate positive transfer of learning. These differences may also act back upon the motivational set which will inform the student's behaviours upon return to

academic studies, which in turn may be manifested in transfer of learning outcomes. Notwithstanding the complexity of motivation and the diversity of theories of motivation considered, the analysis of the placement environment in this chapter (academic and workplace context) within which motivation is likely to be a variable subject to modification – and which in turn will influence performance – has indicated the form and scope for research in this field which goes beyond the generality of factors which separately influence student motivation and factors which influence workplace motivation. What emerges from the analysis is a synthesis of academic and workplace influences on intern motivation which encompasses both domains, and which specifically identifies the course that future research should take: specifically the need to establish the state of the intern's motivation towards the placement in the pre-internship phase; the state of motivation during the internship (and how this might change in this period); and the state of motivation towards the programme of studies post-internship (and how this might change). Finally there is a need to identify and measure a performance variable which can be reasonably expected to vary with variations in motivation. This thesis argues that academic performance can be assumed to fit this role. Taken together - motivational states and their rates of change, and measures of association with academic attainment – this represents a programme for future research. In the next chapter one will consider how contracts may be used within the placement architecture to provide consistency and transparency of purpose which might reduce the scope for significant and undesired variations in student motivation.

Chapter 7 Contracts, Placement and Learning Transfer

“Contracts are a product of free societies. Choice underlies the existence and meaning of contracts. Freedom gives new meaning to promises and gives contracts a special significance. Motivationally, having a choice can engender a great personal commitment to carry out a promise.” Rousseau, (1995) xiii

7.1 Introduction: Contracts, Learning Transfer and Placement

In previous chapters it has been seen that learning transfer in general is a function of a complex range of factors including motivation, teaching and learning context, the extent to which there is training for transfer and the type of learning which is to be transferred - which can be variously characterised as ranging from near transfer to far transfer (or alternatively expressed: low-road and high-road transfer) on the one hand, and from relatively low-level skills to characteristics associated with complex problem solving. It was also argued that automaticity of transfer cannot be anticipated even in the case of relatively low level skills. In addition, operating on the theme of the distinction between surface approaches to learning and deep approaches, it was suggested with respect to analysing the learning transfer which one is seeking from placement to the academic domain, that two distinctive approaches to theories of learning might be salient in understanding the processes of such transfer: namely the behavioural approach (which one proposes is more relevant to explaining the efficiency conditions for low-level skill transfer), and the cognitive approach which might better give an account of the optimum conditions for higher-level learning transfer. It was also noted that there are parallels to these modes of learning in how one can characterise student approaches to learning: namely those who adopt a surface approach and those who take a deep approach to learning. Recognition was also taken of the fact that in many situations, the distinction between near and far transfer might be too artificial in that many tasks in the workplace (though less so in the academic domain) require an admixture of responses which call upon routine skills or competencies as well as higher-order problem-solving attributes. In the previous chapter the question of motivation was considered; it was argued that the complex interaction of the pre-internship motivational set with the defining host motivational set might have an impact upon the conditions which influence transfer and the potential for transfer from the workplace domain to that of the academic domain post-internship. A final consideration which is linked to both motivation and the architecture of placement – and

hence to the potential for learning transfer - is that of the role of contracts. This will be the subject of this chapter where consideration will be given as to how contracts – formal and informal – if placed at the centre of placement architecture might provide the cement that binds together the other forces which can promote positive transfer of learning.

7.2 The Nature and Role of Contracts: The Individual and the Organisation

“Contracts are made when we surrender some of our freedom from restrictions in exchange for a similar surrender by another. But by giving up something voluntarily, each gets more than might be possible otherwise.” Rousseau, (1995) xiii

The ultimate rationale for engaging in contracting behaviour is the expectation of augmenting the net gains from a set of agreed behaviours than would otherwise be the case were individuals to pursue independent goals. At the heart of any contract is the idea of the organisation of goals; the goals of the individuals engaging in the contractual behaviour may be different but they share a belief that the conditions of the contract will increase the probability of the parties to the contract achieving their individual goals. From this perspective, any contract can be viewed as an organising device. For example in the field of Economics, in the *Theory of the Firm* one reason given for the existence of the firm is that it represents a complex set of contracts whose efficacy lies in their organisational function such that the numbers of contracts necessary for, say, industrial scale production, are reduced by the firm's legal incorporation (e.g. Lyons, 1996). To be sure, there remain the contracts that exist between the legal entity which is the firm and its employees – but this is fewer in number and more efficient than would be the case if every single worker had to enact an individual contract with every other co-worker.

7.3 The Operating Principles of Contracts

According to Rousseau, (1995) there are four features relating to contracts that help one's understanding of their operating principles:

- i. Contracts are inevitable in modern organisations, and are fundamental to productive relationships.
- ii. They reflect multiple realities and interpretations within individuals and between groups.

- iii. General principles operate across contracts – but to be able to predict individual behaviours within the parameters of contracts, and the outcomes for organisations, one needs to account for specific situational factors (organisational, social and personal dimensions are important to understanding the context and the consequences).
- iv. Fuzziness and ambiguity are often built into contractual arrangements, creating flexibility and the inevitable conflicts.

7.4 Contracts as Psychological Drivers

It was argued in Chapter 6 that motivation could be a crucial variable in determining the extent to which there will be transfer of learning between and within domains. In this context contracts are to be seen as forceful psychological drivers which have the potential to enhance motivation. This arises from the characteristics which are shared by all types of contracts:

- i. Voluntary undertakings lead to more consistent fulfilment than coercion does (Latham and Saari, 1979).
- ii. Basic models of motivation, for example, expectancy theory (Vroom, 1964; Polczynski and Shirland, 1977), or operational conditioning (Skinner, 1969), predict that individuals in relationships within organisations tend to act in ways expected to produce positive outcomes. It is specifically with this purpose in mind that contracts are designed.
- iii. Unless contractual arrangements and the anticipated outcomes are seen as beneficial to the individuals as well as the organisation, there is no strong motivation to make or comply with a contract.
- iv. Individuals will resist changes to contracts that are perceived to create losses. Since contracts are perceived to be beneficial, individuals resist changes to contracts instinctively in conditions of limited information-processing capacity, since this creates *bounded rationality* – whereby if the decision-maker's information-processing capacity is insufficient to handle and process all of the information required to make a *rational* decision, then the response is not to refuse to make a decision, but rather to make one which is not totally rational - which in turn limits information seeking (Simon, 1976).

- v. It is efficient to create mental models or schemas (an artefact of cognitive psychology) that organise experience so that many actions are governed by automatic processes rather than careful deliberation (Richards, 1984; Sims and Gioia, 1986). Once mental models are formed yielding anticipated rewards, they become relied upon and resist revision. In this respect contracts can be viewed as stable and enduring mental models (Rousseau, 1995).

The above can be summarised thus: when contracts are freely entered into, their very voluntariness is a positive force in promoting contract fulfilment. However, it is impossible to provide details for every eventuality within the contract at the time of its creation thus there is always scope for flexibility or areas which are in a sense blank, and these are filled-in as new eventualities are confronted. But attempts to significantly alter contracts will be resisted by any of the contracting parties who perceive that the proposed changes will create losses for them. If events force contract changes then the contract-related activity will in significant part be concentrated on reducing these anticipated losses. Finally, there are aspects of contract creation which are associated with the concept of *schema* – that is, the establishment of enduring mental models which have two functions which are relevant to this analysis: they are resistant to change, and can prevent people from noticing changes that occur over time. A schematic representation of the forms contract may take is shown below.

A schematic representation of types of contracts

		<u>Level</u>	
		Individual	Group
Within	<i>Psychological:</i> Beliefs that individuals hold Regarding promises made, accepted and relied on between themselves and another (person(s), organisation)		<i>Normative:</i> The <i>shared</i> psychological contract that emerges when members of a social group or organisation hold common beliefs
<u>Perspective</u>		1	2
		3	4
Outside	<i>Implied:</i> Interpretations that third parties (witnesses, jurors etc.) make regarding contractual terms		<i>Social:</i> Broad beliefs in obligations associated with a society's culture (for example, reliance on a handshake)

Fig 7.1 Rousseau, D M (1995) *Psychological Contracts in Organizations*, London, Sage, p9

7.5 The Psychology of Contracts: The Organisation and the Individual

Thus far this discussion on contracts has implied that in using the term, one means at all times the formal type of contract that workers sign when taking up a new post, when house buyers put their names to mortgage agreements and deeds, or to which sportsmen give their name when endorsing a product for commercial gain. However, in the same fashion in which one can distinguish between surface learning and deep learning, the formal contract has two layers: the surface appearance of the agreement in greater or lesser detail which forms the legal architecture of the contract; and the psychological layer which operates on motivation and on compliance (or non-compliance). A psychological contract can be defined as:

the unwritten set of expectations that exists between persons in a relationship, the members of a group, the people who work for an organization etc.
(Reber, 1995; Rousseau, 1995).

Considering the nature of the contractual arrangements between an individual and an organisation such as a business enterprise, a university, a NHS Trust and so on - in framing the terms of a contract it is not the individual usually (the exceptions being individuals with special attributes which carry a premium in the marketplace) who is the dominant agent; rather it is likely to be the organisation (and its representatives or agents) which will shape the beliefs of the individual in regard to the terms of an exchange agreement which the contract represents. On these terms then, the contract has the potential of a self-fulfilling prophecy, in that it can create the future shape of the relationships between the individual and the organisation. Thus those individuals within organisations who make and adhere to their contractual commitments can anticipate and plan with greater certainty as to anticipated outcomes of actions, because their actions are more easily specified and are more predictable in their consequences to themselves and to others. And since the organisation – the firm, the university, the Health Trust, etc. – is in essence a mechanism or agency for achieving efficiently a set of well-defined goals (profit, provision of higher education qualifications, healthcare etc.) the contract functions psychologically towards goal achievement and, *ceteris paribus*, makes individuals and the organisation more efficient. As Rousseau expresses it,

“A key feature off the psychological contract is that the individual voluntarily assents to make and accept certain promises as he or she understands them. It is what the individual believes he or she has agreed to, not what that person intends, that makes the contract.in each individual’s psychological contract there is a perception of agreement and mutuality, if not agreement in fact.” (Rousseau, 1995, p10)

7.6 Thinking Contractually

The psychological impact of any agreement, written or otherwise, is a function of many variables including for example, the personality type. However, using the concept of *thinking contractually* one can identify the conditions under which it is more or less likely that a contract will have a significant impact on behaviours and outcomes (Rousseau, 1995). One is interested in this aspect of contract making since it will shed light on whether or not the use of explicitly modelled learning contracts in the placement arrangements are likely to facilitate transfer of learning from the placement experience to the academic domain upon return to studies.

Rousseau defines *thinking contractually* as containing the following elements:

- i. believing one had made a commitment and is therefore bound to some future action
- ii. relying on the understanding one has regarding commitments received from others
- iii. when faced with competing alternatives, making choices based on the relative harm involved in honouring and not honouring those commitments.

(Rousseau, 1995, p23)

When thinking contractually is then considered in the context of the conditions under which individuals (and organisations) are likely to keep promises made, one has a better understanding of the potential strengths and weaknesses of the contract approach to facilitating learning transfer. Individuals keep promises for a range of reasons including:

- i. *Acceptance*: promising to do something involves goal-setting; such goals, if set willingly are likely to be accepted by the promisor. Additionally goals made in such circumstances are powerful determinants of performance (Locke et al, 1981); in willingly agreeing to the goals the contractor has accepted them.
- ii. *Self-Image and Esteem*: people act in such a way as to promote consistency in how they see themselves. For individuals who value such consistency in their self-image, pressure is generated within themselves to adhere to commitments that can be either publicly made or privately made. Shanteau and Harrison, (1991), found that in experiments aimed at inducing contract-breaking, there was high resistance to violation of contracts unless the incentive to do so was highly salient (for example, offering greater amounts of money.) In other words, the norm for willing contract-makers is to honour the terms *ceteris paribus*.
- iii. *Imagery formed by the act of promising*: the argument here is that by making an overt statement or promise, the individual may have “*exercised the fact of that promise in their mind.*” (Rousseau, 1995, p24) That is to say, by making a promise with respect to a future action, one may have imagined engaging in that action; by thus visualising or imagining, one may have increased the likelihood that the action will be performed.
- iv. *Reliance losses*: contract makers are typically reluctant to violate agreements in ways that would create losses for another party. Many adjustments in contracting are attempts to reduce reliance losses.

- v. *Social pressure and concern for reputation*: where promise keeping is a social norm, social pressure is a factor in enforcing contracts; and in fields where individual behaviour is highly visible to a wider public, reputation promotes promise keeping.
- vi. *Incentives*: rewards play complex role in contract keeping; there is a difference between the rewards for making a contract and that for keeping to it. The value of incentives may change once the contract is made and performance begins. Shanteau and Harrison, (1991) found that while contract violation could ultimately be induced once the financial incentives were increased to a high enough level, even where the incentives for contract keeping had declined, the contract may still be adhered to.

7.7 Drawing Together the Theory of Contracts and Promise-keeping

One can propose that promise keeping as a feature of contractual agreements will be at its greatest when:

- i. Individuals are conscious of making a promise and are committed to keeping it;
- ii. People perceive high degrees of personal control - one is likely to keep promises when one feels capable of doing so and to break them when one feels powerless to do otherwise; thus environmental or situational factors can compromise promise keeping;
- iii. Personality types with a high locus of control or strong moral or ethical standards affecting their behaviour, are likely to be resistant to situational pressures and constraints that do not meet their expectations of acceptable behaviour.
- iv. Knowledge is easily available regarding the effect of breaking a promise on others (especially if the other parties are co-workers); but if the promisor is distant from the promisee, breach is more likely.

Social norms support promise keeping; stable groups whose norms are intact, will demonstrate more promise keeping than unstable ones.

7.8 Contracts and Learning

The role of contracts in learning developed in the late 1960s and 1970s (for example, Haddock, 1967; Birdwell, 1972; Avakian, 1974; Polczynski, and Shirland, 1977).

Polczynski, and Shirland (1977) devised a test for measuring the effectiveness of learning contracts which had been designed using the motivation theory of expectancy (also known as *goal path analysis*) at their centre. The theory argues that if a student is given a clear goal and is shown a clear path leading to that goal – perhaps the goal is a certain set of grade averages – the student will be motivated to increase goal-path effort. The key to the theory is the setting out of the goal path: traditionally a student might have a goal – say success in examinations - but only have a vague idea of the goal path, or have some general notion that it will entail keeping up with the lecture material, submitting assessments on time, studying for examinations and so on; but because of the blurred nature of this approach, the goal path is unclear and the outcomes uncertain and not weighed in favour of success. In these circumstances, a sense of anxiety is a natural consequence of the uncertainty inherent in the goal path and failure to achieve the goals has an increased probability. When goal failure emerges, there is reinforcement of the sense of failure and a heightened sense of anxiety and the cycle continues with increased intensity and increased likelihood of failure, discouragement and reduced motivation. Expectancy theory argues that motivation can be induced by the combination of a desired goal, the specification of a clear path towards that goal and a belief by the student that the performance level likely to be reached by the student will lead to the attainment of the goal. The relationship between performance and reward is called the *instrumentality*. Polczynski, and Shirland, (1977) argue that by increasing the level of instrumentality (effectively the heightening of the relationship between performance and reward) then educators will enhance motivation and in turn performance. But the question is how best to increase the instrumentality? The authors sought to do this by a contractual relationship with the student. The nature of the contract was designed such that the performance levels necessary to achieve a certain grade were explicitly specified and agreed. The research results indicated that instrumentality was increased by a contractual arrangement and that as the theory predicted, student motivation and effort was raised as was attainment. (See also Haddock, 1967; Avakian, 1974). How such an approach might be

included in the architecture of placement will be considered in the next and following sections of this chapter.

7.9 Contracts, WBL and Transfer of Learning

While initially the use of learning contracts was developed in the formal educational sectors of schools, colleges and latterly universities, its adaptation to the learning relationship in general and then to aspects of work based learning is largely based upon Kolb's (1984) analysis of experiential learning and developed by Knowles (1986). Taking as its starting point the theories of learning which make a distinction between deep and surface approaches to learning (for example, Marton and Säljö, 1984), and coupling these to the notion that workplace learned competencies have many of the attributes of surface learning, Knowles argues that such competencies developed in the workplace need not be inferior to deep learning if supplemented by strategies which encourage reflection and self-knowledge. Central to such strategies for endowing competencies with the attributes of deep learning are learning contracts: the reflection and self-knowledge associated with deep learning approaches can be engendered by properly structured contracts since these are known to embody well-established psychological drivers which, in addition to acting directly upon student motivation, also act upon cognitive processes. If effectively embedded in the architecture of placement, learning contracts should help create the conditions for positive transfer on return to studies (Latham and Saari, 1979, Rousseau, 1995). The transfer problem of the placement can be perceived as one in which academic learning is, in its prime form, as distinctively different from WBL as is deep learning from surface learning (Marton and Säljö 1984; Hager, 2003); a difference which might be obviated by the appropriate use of contracts at the heart of the placement architecture to encourage reflection, self-knowledge and general meta-cognitive strategies (Cox, 1997; Sternberg, 1998, Cornford 2002). Thus a placement architecture which is properly designed and managed from conception to completion and built upon transparent and consensual contractual obligations for those involved, may facilitate improved academic achievement on return to studies.

7.10 Contracts and Placement: Roots of Confusion

It has been seen above that for contracts to be effective in relation to the efficient attainment of agreed objectives they must adhere to certain general principles. In addition, in order to function motivationally through their psychological aspect they have to create clear mental schema. Put simply, contracts must be clear in what it is they are attempting to achieve; they must be clear in outlining the path to achieving these goals; and the contractors must be aware that they have undertaken the terms of the contract. In the case of the use of contracts for learning, it should be axiomatic that the student realises that he or she has undertaken such a contract.

7.11 Contracts and Approaches to Learning

It was seen in Chapter 4, (4.7, 4.8) that certain factors mitigate against a universally deep approach to learning. (Marton and Säljö, 1984, Ashcroft and Foreman-Peck, 1994, Ryan, Toohey and Hughes, 1996). Included in these factors were:

- i. Institutional factors such as the “hidden curriculum” in universities (Snyder, 1971; Miller and Parlett, 1974);
- ii. That some individuals are predisposed towards a surface approach to learning;
- iii. That even where students have the requisite attributes for deep learning, many tasks require only surface approaches;
- iv. Allied to the latter, on the basis of specialisation by comparative advantage, surface learning may be often be a more efficient use of cognitive resources for students.

The evidence on the effectiveness of contracts in engendering more effective learning is mixed: Harris, (1994) undertook a study to determine the effectiveness of student learning contracts in an open-admissions, public community college history course. The contracts specified final grade goals and point-earning activities (e.g., tests, book reports, term paper). A control group (N=72) using the learning contracts was compared with a demographically similar experimental group (N=51), which did not use learning contracts. It was found that:

- i. 25% of the control group completed their contracts;

- ii. 72.55% of the experimental group completed at least one book report or term paper, compared to 69.44% of the control group;
- iii. the control group achieved a total points earned mean of 94.50, while the experimental group mean was 86.07.

The control group (with learning contracts) completed more learning activities and performed significantly better in terms of overall points earned. It was concluded that the use of learning contracts should be carefully evaluated in terms of its purpose, design, and student willingness and ability to set and achieve goals. Chiang, (1998) studied over a six year period whether metacognitive strategies could enhance learning achievement and whether the use of individual learning contracts enhanced an individual's ability to become a *conscientious learner*. The criteria included whether students would learn by planning, controlling, monitoring learning processes, and using study skills. The use of metacognitive strategies included setting goals for individual learning programs, developing individual learning contracts, monitoring learning processes, writing reflective journals, conducting individual conferences with the instructor, and being involved in summative evaluations. There was some indication that the processes involved, aided the development of conscientious learning skills. One of the other outcomes was that the tutors found that the portfolio of processes involved - learning contracts, appraisals, reflective journals etc. - fostered a rapport with students.

7.12 Contracts in Placement: The Placement Student and Misperceptions of Obligations

In practice the individual in the organisation is not continuously reviewing his or her behaviour in terms of its relationship to the conditions of whatever contract he or she is operating under. Indeed the individual after the passage of time, and in the absence of any overt breach of contractual obligations on the part of the organisation – or in the absence of organisational strife – may become increasingly vague as to the nature of the formal contract. One could argue that no organisation could function effectively under conditions where on a daily basis individuals questioned instructions or duties in relation to “the contract”. In practice then the formal contract becomes background whose *noise* only intermittently becomes salient in acceptance and performance of the individual's duties and tasks, and that

most often in periods of strife, disruption or uncertainty (restructuring, redundancy, take-overs etc.) As Rousseau puts it:

- i. Contract-related information is sought only at certain times.
- ii. Contract-related information is actively processed at certain times
- iii. Contracts tend to endure until a noticeable signal conveys a break or interruption.

7.13 Contracts and Optimising the Benefits of Placement: Summary

It has been shown in previous chapters that if the benefits of placement are to include enhanced academic performance upon return to studies then positive learning transfer has to be facilitated between the workplace and the academic domain. But learning transfer is a function of a complex range of factors including motivation, teaching and learning context, the extent to which there is training for transfer and the type of learning which is to be transferred. In this chapter, one has considered how contracts might be utilised to engage the differing forces which interact when the student is placed in the work environment, such that the conditions for successful transfer of learning are improved. When the student elects to undertake a placement, he or she must have a goal set. This may include some less than positive aspects such as a desire to have a break from formal studies or to escape temporarily the exam-based system of assessing progress and development. But for the most part the goal set will include the expectation that the internship will lead to the acquisition of the full range of benefits commonly associate with placement in the literature, and this can include enhancement of academic performance with the possibility of obtaining a degree classification greater than would otherwise have been the case. It is here that contracts may have a role to play: the rationale for engaging in contracting behaviour is the expectation that the personal (and institutional) gains from a set of agreed behaviours will be greater than would otherwise be the case were individuals to pursue independent goals. The organisation of goals is at the centre of any contract; the goals of the individuals and institutions engaging in the contractual behaviour may be different, but there is a commonly held belief that the conditions of the contract will increase the probability of the parties to the contract achieving their individual goals. However, contracts can break down for several reasons, and when this happens both motivation and performance are likely to suffer. When this happens in the placement environment, the likelihood is that transfer of learning will not be optimised.

Chapter 8: Placement and Academic Performance: Deriving Testable Hypotheses

8.1 Placement and the Set of Expected Benefits Accruing to the Undergraduate

It was shown in Chapters 1 and 2 that the political economy of higher education in the late 20th and early 21st centuries in the United Kingdom, is characterised by the drive towards the vocationalisation of undergraduate programmes, and that this includes the promotion and increased provision of opportunities for quality work placement for undergraduates. Among the set of benefits which are held to accrue to the undergraduate taking such placements is the potential for enhanced academic performance upon return to studies. It was demonstrated in Chapter 2, that this expectation of enhanced academic performance post-internship, implied a theory of both work-based learning and of transfer of learning. It was also noted that there was a paucity of empirical studies on the measurement of transfer of learning from the workplace to the academic domain.

8.2 Theories of Learning Transfer and the Architecture of Placement

In Chapter 3 issues of effective placement planning and management were introduced in the context of WBL and theories of transfer. Chapter 3 also introduced the concept of architecture of placement and this candidate's conceptualisation of different architectures was introduced – specifically, *work environment* architecture and that of *learning environment* (3.10). Chapters 4 and 5 examined theoretical issues of learning and transfer of learning in greater depth, and specified the nature of the transfer problem involved in the relationship between WBL and what it is that is being evaluated in the academic domain post-internship. Chapter 6 argued that motivation pre- and post-placement necessarily has a role to play in performance, and that motivation will not only be a determinant of performance but will also itself be a dependent variable in relation to the placement experience. Chapter 7 developed the proposition that contracts, acting as powerful psychological drivers, could have a role to play in determining the effective outcomes of placement; with the likelihood of enhanced academic performance as a result of positive transfer of learning from the internship being a positive function of the degree of transparency of purpose and design of such contracts as embedded in the architecture of the placement and in the specification of expected outcomes of the internship.

8.3 Work Placement, Academic Performance and Testable Hypotheses

The foregoing arguments which have been developed in earlier chapters and which have been reprised in essence in the preceding sections of this chapter give rise to a series of hypotheses, some of which will be the subject-matter for examination, testing and discussion in the rest of this thesis. These hypotheses can be framed in general terms thus:

- i. Work placement might enhance academic performance.
- ii. Work placement should be able to enhance academic performance.
- iii. The architecture of placement will determine the probability of positive transfer of learning from the workplace to the academic domain.
- iv. If motivation is reduced by the placement it will result in reduced academic performance upon return to studies even under the learning environment architecture.

While the above expression of these working hypotheses might be interpreted as broadly the same thing expressed differently, this is not the case. For example, hypothesis i, is admitting of the possibility that by chance work placement will transfer positively into attributes which will lead to improved academic performance. The chance element might be that the activities and tasks undertaken successfully in the workplace mirror those which will be tested in the examination room. The open-ended framing of the hypothesis admits of the possibility (or probability) that placement might not be associated with improved academic performance. Hypothesis ii, can be interpreted as a political or philosophical statement – that if work placement does not lead to improved learning in the classroom then it is a missed opportunity for which there is a resource cost. Hypothesis iii, is a positive statement which can be tested. It is this latter hypothesis which will be refined in Part Two of this thesis and which will form the greater part of the analysis and discussion in the rest of the work. Hypothesis iv, is to be seen as a subset of hypothesis iii. Here it is recognised that even if the architecture of placement is configured to increase the possibility of positive transfer of learning and enhanced academic performance, it is nevertheless the case that intern motivation on return to studies may be reduced (temporarily at any rate) by the placement experience.

Part Two: Methods, Data Sources, Procedures and Results

Chapter 9: Hypotheses, Methods and Procedures

9.1 The Hypotheses to be Tested

The formal hypotheses set out below for testing are derived from the general hypotheses that were framed in 8.3 above. Each of the hypotheses can be traced to arguments which were derived and developed from the literature reviewed in Part One.

- H0₁ Placement under work environment architecture will not lead to enhanced academic performance on return to studies.
- H1₁ Placement under work environment architecture will lead to enhanced academic performance on return to studies.
- H0₂ Placement under learning environment architecture will not lead to enhanced academic performance on return to studies.
- H1₂ Placement under learning environment architecture will lead to enhanced academic performance on return to studies.
- H0₃ Motivation of interns on return to studies will not be affected by placement under the learning environment architecture.
- H1₃ Motivation of interns on return to studies will be affected by placement under the learning architecture.

9.2 Methods: Identifying the Problem

This researcher identified a central research question that arose initially from a desire to subject to a test a *conventional wisdom* that has built-up around the portfolio of benefits associated with undergraduate placement. In particular, the research question is concerned to examine the claims for a positive impact of internship on undergraduate academic performance post-internship. As was reported in Part One, claims for an academic benefit associated with placement are made by some stakeholders, including universities, despite the fact that they remain largely untested in the literature and are unaccompanied by evidence

when promoted by the interested parties. In its brashest form, the claim is that work experience has a positive impact on academic performance of undergraduates on their return to studies post-internship. In a more sophisticated form of the claim, it is that *quality placements* will enhance academic performance of those undergraduates who experience them. In addition to a lack of supporting evidence, those who promote internship for undergraduates have not provided a theoretical underpinning for such claims. This thesis thus far has identified the theoretical issues as being concerned with transfer of learning and how this is dependent upon modes of learning, as well as issues relating to the architecture of the placement.

9.3 Methods: Experimental Design Characteristics

To go some way to providing an evidence base on the general proposition that work placement will enhance academic performance on return to studies, this researcher conducted an investigation which in design terms has elements which are common to *ex post facto* research design and to those of a *natural experiment* (Cohen and Manion, 1994, 1997, Reber, 1995). The data is archival, anonymised within subject groupings, and the independent variable (placement) is identifiable as having been distinctively changed in form over a discrete period of time (see Appendix 10 for details). In broad terms the practical foundations of this methodology can be presented thus:

- i. Statistical analysis of data sets on academic performance of business undergraduates, some of whom had taken one year paid placement by choice. Academic performance is measured by formal examination data with an element of coursework; this was compared with that of non-placement peer cohorts and a test for differences was conducted.
- ii. Statistical analysis for differences of data sets whereby academic performance of the various cohorts was measured for differences in intra-cohort performance. That is to say, each cohort's performance was compared with itself after a time lag; any differences are interpreted in terms of *academic value-added*.
- iii. The above procedures were undertaken in the context of changes in the architecture of the placement such that two clear models of placement could be discerned (see Appendix 10); the nature and timing of these changes being such

that it could be termed as operating under the conditions associated with a natural experiment.

- iv. To take account of the possibility of a motivational effect on the placement cohort under learning environment architecture, data obtained from a survey of the learning environment cohort was mined, (Appendices 11 and 12), and inter-semester performance was tested for differences.

9.4 The Choice of Performance Measure

Final module marks, expressed as percentages were used to measure academic performance. These included an element of continuous assessment in all modules. All students took eight modules in each year (in a very few cases a student might take an additional module such as a language that was not part of their programme, or had been chosen to meet certain prerequisites). In neither model considered was the placement subject to academic assessment for credit. No attempt was made to measure the impact of the placement on other attributes which are commonly associated with successful internships, such as interpersonal skills, teamworking and other aspects of personal development. In addition to the archival material on examination and overall assessment performance, material on student motivation and attitudes to the placement was obtained from a field survey. This was in the form of a questionnaire which was administered through the placement office in the first few weeks of the first semester of the returned placement students, and was scheduled to be returned by early December along with compulsory material associated with completion of the placement requirements. The questionnaire covered a broad range of areas, only one of which was directly related to motivation post-internship. Despite tying the questionnaire to the return of compulsory elements of placement material, only 37 were completed and returned (out of 71) a response rate of 52%.

9.5 Testing for Differences: Selecting the Test Statistic

The basic task of the statistical analysis under both of the architectures being investigated was to determine whether there were any differences in assessment performance between those who had undertaken placement and their peer cohorts who had not. Being a test for differences the next decision was to determine whether a parametric or non-parametric test

for differences was appropriate to the data sets. For a parametric test for differences such as the t-test, the data sets must meet certain criteria (Greene and D'Oliveira, 1996): the data must be on an interval scale; there should be homogeneity of variance between the data sets under each condition; the data should be normally distributed. Consider each in turn:

- i. *Interval scale*: the assessment data expressed in percentages meets the requirement.
- ii. *Homogeneity of variance*: F-tests for variance determined that differences were not significant
- iii. *Normality of distribution of data sets*: this was tested using the Kolmogorov-Smirnov statistic (See Appendix 10A). It was found that the some of the data sets were not normally distributed, breaching one of the conditions for the use of a parametric test statistic.

In the light of the above it was decided to use a non-parametric test for differences: specifically the Mann-Whitney U-statistic (Details of the procedures are given in Chapter 10)

9.6 The Underpinning Rationale of the Investigation

The investigation undertaken can be considered as having been posited upon conditions which have elements of ex post facto research and that of a natural experiment: the researcher had no place in the selection of the members of each cohort under both architectures; the changes to the architecture of placement had a broader scope and purpose than the narrower potential for enhancing academic performance, though this was now an implicit aspiration for the internship; under both architectures academic performance was not the central issue, and yet the changes presented an opportunity for the testing of a general hypothesis as to the relationship between placement and academic performance, the existence of which had been frequently asserted without a reliable evidence base. One could designate those cohorts who undertook placement as the *Experimental Groups*, and their non-placement peer cohorts as the *Control Groups*. Thus one is arguing that such are the otherwise shared characteristics of the students in both sets of cohorts that any differences in academic performance are likely to arise, at least in part, from the intervention of the independent variable (placement). However, in presenting the investigation, results and discussion of the results, one will use the terms *placement* and *non-placement peers*, (or

intern and *non-intern* peers) with the understanding that the former is to be identified with the Experimental groups and the latter with the Control groups.

9.7 Some Methodological Objections to the Research Design

In setting out the basic premises which are to be tested in this thesis and the methodology which is at the heart of the procedures, there is a general set of assumptions which are implicit to the rationale of the methodology employed: that the statistical data at the core of this thesis is measuring what has been claimed for it (academic performance); that it is reasonable to assume that one should be able to discern such a relationship as has been hypothesised herein for that between the architecture(s) of internship programmes and the academic performance of those who undertake such programmes. To raise the possibility that these core assumptions might be flawed in conception is to raise question as to research design. These and related issues will be addressed in the rest of this section.

9.7.1 Confounding variables: general. Although one may find distinctively different (and statistically significant) outcomes under the different architectures investigated in terms of academic performance post-placement, one cannot say with certainty that the independent variable (placement) and variations in that variable (architecture) is the cause of any observed differences in results reported. The reason for this is quite straightforward and reflects a commonplace problem for experimentation (or field trials) in the social sciences: the existence of *confounding variables*. This refers to the fact that one is often incapable of separating and controlling for variables whose effects cannot be separated from that of the independent variable. For example in the quasi / natural experiment which characterises both sets of investigations in this study, while one attempts to control for *placement / no placement* and *architecture*, as between sets of cohorts, one cannot be totally certain that other variables will not intervene over the period of the investigations, thus confounding the investigation.

Examples of potentially confounding variables in both sets of investigations would be:

- i. Changed module content between the first set of Finals (*control group*) and the second set (*experimental group*);

- ii. Different assessment criteria between the two sets of Finals for each paired cohort;
- iii. Changes in teaching personnel;
- iv. Changes in assessment personnel;
- v. Changes in assessment environment (e.g. physical – say new teaching accommodation);
- vi. Changes in age-profile of students taking Finals (placement students on average one year older than non-placement students at Finals);
- vii. Differences in the weather during Finals for each group;
- viii. Differences in the extent to which students involved in both groups are *prior-selecting*. For example if there was no attempt made by the institution to select students who would best benefit from placement.

The above list is by no means exhaustive, but does indicate the difficulties in both designing an investigation and in interpreting its results. However, by highlighting potentially confounding variables one is indicating the direction one would wish to take in further investigations aimed at isolating any impact of the main variable of interest – in this case, that of the internship and its architecture, but could just as easily have been some other variable. For example, a future experiment examining the impact of placement on academic achievement might try and control for teaching / assessment personnel, or for the selection basis.

9.7.2 Confounding variables: individual differences. It can be argued that in terms of educational or learning experience of the students considered, that because of individual differences (internal and external to the undergraduate), it is conceptually meaningless to describe one cohort as the *control group* and the other as the *experimental group*. The argument here is that while the broad experience of the students over their academic year might on the surface appear to be characterised by common educational experiences – modules taken, lecturers/tutors shared, teaching methods, physical environment, basis of assessment etc – underneath, at the level of the individual, the student whole-life experience outside of the immediate educational experience (*external* differences), will of necessity be different for each student, as will the set of individual characteristics (*internal* differences)

which the student takes with him/her to any learning environment such as the university or the internship (*Big five* model; for example, Costa and McCrae 1992, Bernstein et al 1997). Moreover, the argument continues, these differentiating external factors or variables, as well as differences in personal attributes, will have an impact on academic performance, through perhaps, effects on motivation, or through physical or mental (emotional) degradation (or enhancement) of ability to perform academically. Examples of “other influences” would include: illness, emotional turmoil occasioned say by grief at the death of a close relative, physical disability caused by illness or accident, the impact of say divorce of parents, the birth of a sibling etc. If one accepts this *individualistic model* one arrives at a situation in which it becomes meaningless to talk not only in terms of *control group* and *experimental group*, but logically meaningless to talk of any type of group which can be distinguished from any other; one is left then considering how best to study a disparate set of elements for whom any claim for statistical commonality arises out of hazard. This argument needs to be carefully scrutinised for its implications for experimental practice in the social sciences. The underlying premise of the above is that however much one tries to eliminate irrelevant variables in the experimental design, one can never be rid of all the factors that cause variability in how individuals act, how they see events, interpret, respond to stimuli. In terms of the *experiment* then, the question becomes: are any differences in scores between the groups (or indeed the individuals) the result of changes in the independent variable – placement and its architecture – or are there no real differences apart from the chance variations in individual performances due to the myriad of “other” variables that lie outside the compass of the experiment and the control situation? If one looks at the descriptive statistics for examination performance of two groups operating under two different conditions, one would generally expect to find differences in means of the two groups coupled with differences in the variability both between the group scores and individuals across and within the groups. However, it is precisely the purpose of statistical techniques to determine if the differences observed between two groups is significant *and* is likely to have been caused by (strong argument) or at least is associated with (weaker argument) the experimental condition, or by some other variable, or in the end, by chance. The arguments proposed above as weakening the validity of the experiment are no less than those arguments that are used to support the selection of a *matched subjects design* (Greene & D’Oliveira,

1996). However, in the cases investigated in this study, the subjects were not matched as between those in the *experimental* and those in the *control* groups. If one were to adopt conventional terms from the literature on experimental design, then the *experiments* reported in this work have some of the characteristics of *independent groups design*. But even here it is clear that the cases considered do not fit this category of investigation design in that the subjects are not allocated between the two groups on a strictly random basis, as would be expected in this design framework (Miller, 1996). The issue here then is whether the process of division of the students into those that undertook placement and those that did not, was sufficiently random to validate the choice of experimental design, or whether there was some non-random allocation that systematically biased the differences in relevant attributes between the two groups? Alternatively put, in independent groups design the process of randomisation is undertaken, not to eliminate the random variation in characteristics between subjects, but to try and ensure that the variation in subject variables is evenly spread across the groups, and that there will be no systematic bias between the groups. However, as has been noted above, the *placement / non-placement* allocation was not the deliberate outcome of a random selection process; in which case can the independent subjects design handle this? The argument outlined at the beginning of this section is rejected, not because it has no validity in its general premises – indeed it is a useful frame of reference for indicating the direction future research into this phenomenon might take, including *micro* issues of traits, and of embarking on a multiple regression type study – but because to take it to its extreme, it would mean the end of social science inquiry as it is conducted today.

9.7.3 Confounding variables: in anticipation of interpreting the findings. When one comes to consider the findings of this investigation (Chapters 10 and 11) the question will arise as to how the methodological issues raised in the preceding sections might modify one's interpretation of the meaning and significance of the results presented. These issues can be categorised as of a *macro* and a *micro* nature. *Macro issues* include the possibility of confounding variables that were not tested for, such as: changes in module content between the first set of Finals (*control group*) and the second set (*experimental group*) which might have taken place over the year that separates these two groups after the Base Year; the application of different assessment criteria between the two sets of Finals; significant

changes in teaching personnel which might affect student response and motivation; changes in assessment personnel applying different criteria; changes in physical environment; interns on average one year older than non-intern peers at Finals. These are *macro* in the sense that while such changes might invoke different responses as between individual students, they are nevertheless experienced across the groups. All of the foregoing and others not listed above would be candidates for a multiple regression statistical analysis in an extension of that which has formed the centrepiece of this work. With respect to *micro issues*, in addition to the argument above that the results of the analysis might be confounded by macro factors affecting cohorts as a whole, there are grounds for believing that at least in part, if there are differences in performance as between groups, these might be explicable in terms of factors which have their impact on individual students (interns and non-intern peers taken individually) and which are not captured by the aggregation technique of testing for mean differences across and between groups. Included in these *micro* influences would be

- i. Individual responses to common experiences may differ. For example, one student might have a preference for one module over an other; similarly one can argue for different responses to different lecturers, to different teaching methods, to the physical environment.
- ii. Students as individuals, as well as having common experiences shared with their peers (in the classroom, in the internship), will have different whole-life experiences outside of the immediate educational experience: as well as having these different experiences of, for example, illness, death within the family or circle of friends, with the loss of love, of debilitating accidents and so on, individual students will differ in their responses to such stimuli. Such differences in the experience of environmental stimuli and in the responses to the same, are likely to lead to differences in performance (academic and non-academic) in ways which might not be captured by the aggregation approach of statistical techniques employed.

9.7.4 Overarching influences and individual differences. While accepting the general force of such arguments, one would counter-argue on several levels that these cannot be allowed to invalidate the central methodology. Firstly, for any given group of

undergraduates in the academic domain, and for any group of interns in the work domain, each domain is an overarching environmental factor which is shared by the students within the group and which gives them a commonality which unites them more than individual differences can divide them; and that this common, unifying force is more powerful on the average, than differences thrown up by family circumstances say, or individual differences such as traits. Thus the premise is (for this and for social science research in general) that overarching influences have greater weight - shared experiences will be evidenced by shared responses such as performances in the workplace and in the formal assessments of the academic domain.

9.7.5 In defence of the limitations of the methodology. While recognising that it would be a potentially productive course of action to try and factor in the wide range of disparate variables mentioned above and which might confound the central analysis, this argument should not be seen as invalidating the methods employed in this work, as long as the limited scope of these methods are made clear. If the arguments were to be given undue weight such as to lead to a rejection of the methods and the subsequent analysis, this would be no less than an argument for disaggregating all data that involves distributions of results; an argument which when taken to its logical extreme sanctions only research and observation (and experimentation) at the level of the individual unit – a practice which would mean the end of the social sciences as they are understood today. In response to this deconstructionist approach one can reply, that while admitting the presence of many irrelevant variables in any investigation which focuses on one or a small set of variables and hypothesised relationships - and that one can never be rid of all of the factors that cause variability in how individuals act and perform, in how they see events, in how they interpret and respond - it is the necessity of making sense of aggregates of behaviour which validates the methods employed. In terms of the investigations herein then, the question becomes: are any differences in scores between the groups (or indeed the individuals) the result of manipulating the independent variable – placement – or are there no real differences apart from the chance variations in individual performances due to the myriad of “other” variables that lie outside the compass of the experiment and the control situation? The answer is readily supplied by a combination

of scientific methodology and an appeal to statistical techniques for analysing groups of data, and for testing the significance of differences in behaviours and performances.

9.7.6 Failing to measure what should be measured. Even a cursory glance at the literature indicates that placement has never been primarily about academic performance, and this would seem to highlight a potential weakness in the central proposition which underpins this thesis: in seeking to find whether there is an association between placement (and architecture) and academic performance, one is in danger of underestimating the real worth of placement to the undergraduate. This will be particularly the case (one might argue) if the results of the tests undertaken and presented in Chapter 10 indicate that there is no strong association between the placement and academic performance. In which case, it might be argued, why has this investigation neglected to test for the claims which are most often made for the benefits of the placement within higher education? This researcher would answer this charge along two lines of development: in the first instance, as has been argued in previous chapters, those interest groups who claim that placement can enhance academic performance have not presented supporting evidence – the cupboard is bare. In arguing for such a relationship, they are making an implicit argument as to the nature of transfer of learning; again this has not been articulated in the literature. Secondly, as for the testing of the broader claims as to the benefits of placement (enhancement of transferable skills, the acquisition of competencies, the enhancement of the quality of *employability*), there is already a sizeable (and growing) body of research in these areas. This is not to suggest that consensus is the end of research – merely that in every area of research one makes choices, and for this researcher the choice was to investigate a field which is under-represented in the literature. Nor is this argument to be taken as being dismissive of the problems of interpretation (and of methodology) which might be thrown up by the results: one of the issues which will be dealt with in the discussion and conclusions (Chapter 11 and 12) will be that of whether a failure to find any association between placement (under varying architectures) and academic performance can be taken as meaning that such an association does not exist. In addition, if such an absence of evidence is found, then one will be concerned to indicate whether the “other” benefits of placement might vary under different architectures, and how this might be tested for. Bearing in mind then the preceding analysis of methodological issues, in particular

the caveats which indicate some of the limitations of the methods chosen, one is now concerned to set out the detail of the procedures undertaken.

9.8 Reconfiguring the Architecture of Placement: An Empirical Investigation

This investigation looks at two sets of business undergraduates who undertook paid placement of one year duration under distinctively different architectures. The reconfiguration of the placement took place over a period of three years (See Appendix 10). The academic performance of the placement cohorts under each architecture was measured against their non-placement peers drawn from the same population.

9.9 Characterising the Architecture of Placement

With this thesis this researcher has introduced into the literature the terms *work environment* architecture of placement and *learning environment* architecture of placement (3.10):

- i. The *work environment* architecture: preparing the student for placement; *supplying* the student to meet the needs of the organisation; little demanded by the university of the student other than meeting the host requirements in relation to conduct and performance. Little is demanded of the host in terms of outcomes which would map back to academic values.
- ii. The *learning environment* architecture: the whole placement environment - from initial information sessions for prospective students, to the preparation of the CV, instruction and practice in interview techniques, through to the interview and selection by the host organisation and the internship itself - is seen as a learning environment and is designed to achieve pre-determined and agreed learning outcomes. Explicit learning demands are placed upon the student and the host; the university retains an active role in the placement experience and the post-placement period has a role to play in embedding the learning transfer.

9.10 Procedures

The same investigative procedures were followed for both the *work environment* and the *learning environment* placement data sets, though these were not coterminous, being separated in this investigation by three calendar years. In both cases a statistical analysis was

made of assessment data relating to cohorts of business undergraduates drawn from the same academic Base Year (Year Two). Under each model, a cohort by choice undertook paid one year work placement on completion of academic Year Two while its non-placement peer cohort from the same academic Year Two proceeded by choice to academic Year Three and subsequently undertook Ordinary Finals. Each cohort on return from placement proceeded to academic Year Three and subsequently took Ordinary Finals. Academic performance was measured by mean module scores in formal exams with an element of continuous assessment which varied by module and did not exceed thirty per cent of the final mark.

Chapter 10 The Selection and Application of the Test Statistic, and the Presentation of Results

10.1 Methodological Issues Relating to Choice of Test Statistic

In this chapter there is a need to determine the appropriate test statistic to allow one to test the hypotheses set-out in Chapter 9. What is being sought is an appropriate test for differences in academic performance as between placed and unplaced students under two distinctively different architectures. The choice in the first instance is between a parametric and a non-parametric test; in principal the preconditions for the selection of one type over another are well-established (e.g. Greene and D'Oliveira, 1996). In Chapter 9 the specific conditions for the appropriate application of each of these was discussed in brief. While the form of the data employed in this thesis – *interval scale* - meets one of the conditions that satisfy the selection of a parametric test for differences (such as the t-test), and while another condition - *equality of variances of the samples* – has been weakened in its force by statistical packages which can allow for unequal variances, it was necessary to consider the distribution of the data sets. If the data sets are normally distributed, then a t-test for differences will be appropriate. If however any of the data sets are not normally distributed then a non-parametric test such as the Mann-Whitney U test is indicated in cases where that data set is being compared with any other, even if the comparator data set is normally distributed. However, while the choice between a parametric and a non-parametric test for differences is in principal determined as outlined above, many practitioners argue that even where all the conditions are not met for the application of parametric tests, as long as they are approximately met (some or all), and are not wildly violated by the data, then a parametric test will render meaningful results. Moreover, it is increasingly debated in the literature whether “*parametric tests are all that more powerful than non-parametric tests*” (Greene and D'Oliveira, 1996, p81). Thus the choice of test statistic may not be as critical as theory suggests. However for the purposes of this thesis it has been decided to err on the side of caution and examine the data for suitability of applying parametric or non-parametric methods.

10.2 Diagnostic Statistics and Choice of Test Statistic

A set of procedures was undertaken to further determine the appropriate test statistic; this was in the main a set of tests for the normality of the data sets. The results in the form of Kolmogorov-Smirnov tests are presented in detail in Appendix 10A. It was established that 3 out of 12 of the data sets were found to be non-normally distributed (Tables A6, A8 and A10); since these have to be paired with other data sets to test the hypotheses, a non-parametric test is considered to be appropriate. The results of the Kolmogorov – Smirnov tests for the three data sets which were found to be non-normally distributed are reproduced below in section 10.2.1 from Appendix 10A. In Appendix 10A the results of applying the parametric t-test to all the data sets are also presented. It was found that in only one case of comparing differences, the t-test produced a different (significant) result to that of the preferred Mann-Whitney test. This is noted below in the appropriate section.

10.2.1 Kolmogorov-Smirnov Results for Non-normally Distributed Data Sets
(reproduced from Appendix 10A)

Table A6 Kolmogorov-Smirnov test: Year 2 Unplaced, *learning environment*

	n	D	p
Year 2 Unplaced	768	0.092	0.0001

The low p-value ($p < 0.05$) indicates that the data set are not normally distributed; a non-parametric test for differences between this and any comparator data sets is appropriate.

Table A8 Kolmogorov-Smirnov test: Year 3 Unplaced, *learning environment*

	n	D	p
Year 3 Unplaced	755	0.062	0.006

The low p-value ($p < 0.05$) indicates that the data set are not normally distributed; a non-parametric test for differences between this and other comparator data sets is appropriate.

Table A10 Kolmogorov-Smirnov test, Semester 2, Year 3 Placed, *learning environment*

	n	D	p
Year 3 Placed (Semester 2)	273	0.111	0.002

The low p-value ($p < 0.05$) indicates that the data set are not normally distributed; a non-parametric test for differences between this and any other comparator data set is appropriate.

10.3 The Sequence of Procedures

Descriptive statistics of all of the data sets, appropriately paired for the hypotheses being tested, are presented to allow visual inspection of any differences in terms of means of module scores of the various cohorts. These are followed by the application of the Mann-Whitney test for differences. The overarching sequence is that the above two procedures are undertaken in the first instance for the data sets relating to *work environment* architecture; after which the procedures are applied to the data sets of the *learning environment* architecture. Brief commentaries follow the provision of each of the inferential test-statistic result in terms of whether the differences observed are significant or not.

Legend throughout

- n = sample size (modules)
- M = mean score (percent)
- SD = standard deviation
- U = statistical measure of the differences in mean rank (used in computation of Mann-Whitney procedure)
- Z = used to compute significances in Mann-Whitney procedure
- p = the probability that the observed difference in mean ranks could be the result of random fluctuations in the dependent variable rather than of a true dependency; a low P-value indicates that the differences are significant
- Significance level is measured at the 5% level.

10.4 Descriptive and Inferential Statistics: *Work Environment* Architecture

Summary results in the forms of tables of *descriptive statistics* followed by the *Mann-Whitney U statistic* are presented below for the *work environment* placement architecture, covering the various categories of cohort years and modes of study (placed / unplaced) which are derived from the hypotheses presented in Chapter 9 (9.1).

Table 10.4.1 Descriptive statistics: Year 2 (pre-placement): *work environment*

Cohort	n	M	SD
Placed	218	55.79	8.71
Unplaced	510	54.20	9.14

Table 10.4.2 U-Test (Mann-Whitney): Year 2 pre-placement *work environment*

	n	Mean Rank	U
Placed Year 2	218	390.243	61202
Unplaced Year 2	510	353.496	49978
	Z	p	
	2.161	0.031	

Commentary on Year 2 differences: the low p-value ($p < 0.05$) indicates that the differences in performance in Year 2 pre-placement under the work environment architecture is significant in favour of those who would elect to undertake placement.

Table 10.4.3 Descriptive statistics Year 3 (post-placement): *work environment*

Cohort	n	M	SD
Placed (post-placement)	221	55.06	8.88
Unplaced	507	55.18	8.79

Table 10.4.4 U-Test (Mann-Whitney):Year 3 post-placement *work environment*

	n	Mean Rank	U
Placed Year 3	221	365.434	56230
Unplaced Year 3	507	364.091	55817
	Z	p	
	0.079	0.937	

Commentary on Year 3 differences: the high p-value ($p > 0.05$) indicates that the difference in performance in Year 3 post-placement under the work environment architecture is not significant.

Table 10.4.5 Descriptive statistics Years 2 & 3 (intra-cohort differences) *work environment*

Cohort	Year 2			Year 3		
	n	M	SD	n	M	SD
Placed	218	55.79	8.71	221	55.06	8.88
Unplaced	510	54.20	9.14	507	55.18	8.79

Table 10.4.6 U-Test (Mann-Whitney): Years 2 & 3 Placed *work environment*

	n	Mean Rank	U
Placed Year 2	218	224.236	25012.5
Placed Year 3	221	215.821	23165.5
	Z	p	
	-0.695	0.487	

Commentary on intra-cohort differences, years 2 and 3 Placed cohorts, work environment: the high p-value ($p > 0.05$) indicates that the difference in performance between years 2 and 3 for the placed cohort under the work environment architecture is not significant.

Table 10.4.7 U-Test (Mann-Whitney): Years 2 & 3 Unplaced *work environment*

	n	Mean Rank	U
Year 2 Unplaced	510	494.280	121778
Year 3 Unplaced	507	523.807	136792
	Z	p	
	-1.604	0.109	

Commentary on intra-cohort differences, years 2 and 3 Unplaced cohorts, work environment: the high p-value ($p > 0.05$) indicates that the difference in performance between years 2 and 3 for the unplaced cohort under the work environment architecture is not significant.

Note: this is the only instance in which the t-tests presented in Appendix 10A disagree with the non-parametric. According to the t-test of the intra-cohort differences in performance of the unplaced cohort under the work environment placement, the difference between years 2 and 3 is significant (see Appendix 10A, Table 10.4.5A)

10.5 Narrative on *Work Environment* Results

Under the work environment model there was no significant difference at the 5% level in the performance of placement students on return to studies relative to their non-placement peers (Table 10.4.3: $M=55.06$ and $M=55.18$ for Placed and Unplaced respectively; Table 10.4.4: Mann-Whitney $p=0.937$; $p > 0.05$). While consonant with the literature which argues that placement design is likely to have a central role in the promotion of positive learning transfer, the issues are more complex than architecture alone: statistical analysis of academic performance in the Base Year (pre-placement) suggests an element of prior-selection in that those who had elected to undertake placement were stronger academically (Table 10.4.1: $M=55.79$ and $M=54.20$ for Placed and Unplaced respectively; Table 10.4.2 Mann-Whitney $p=0.031$; $p<0.05$). When intra-cohort performance is examined the difference between Years 2 and 3 for the Placed cohort was not significant (Table 10.4.5: $M=55.79$, $M=55.31$, Placed Years 2 and 3 respectively; Table 10.4.6: Mann-Whitney $p=0.487$; $p>0.05$). The difference in intra-cohort performance for Years 2 and 3 of the Unplaced cohort was not significant (Table 10.4.5: $M=54.20$, $M=55.18$ for Years 2 and 3 respectively; Table 10.4.7: Mann-Whitney $p=0.109$, $p>0.05$. *As noted above, the t-test of this difference shows it to be significant*). The Base Year superior performance of the placement cohort was not carried over to Ordinary Finals: initial prior-selection favouring placement had been eroded by the time the Placement cohort had returned to studies and had taken Ordinary Finals. In discussing the results in Chapter 11 these issues will be expanded upon and considered in greater detail.

10.6 Descriptive and Inferential Statistics: *Learning Environment* Architecture

The same sequence of procedures as carried out for the *work environment* architecture are now undertaken for the *learning environment* architecture. Summary results in the forms of tables of *descriptive statistics* followed by the *Mann-Whitney U statistic* are presented below for the *learning environment* model, covering the various categories of cohort years and modes of study (placed / unplaced) which are derived from the hypotheses presented in Chapter 9 (9.1).

Table 10.6.1 Descriptive statistics Year 2 (pre-placement): *learning environment* model

Cohort	n	M	SD
Placed	576	54.61	11.11
Unplaced	768	51.90	10.91

Table 10.6.2 U-Test (Mann-Whitney)Year 2 Placed and Unplaced, *learning environment*

	n	Mean Rank	U
Year 2 Placed	576	728.984	253718.5
Year 2 Unplaced	768	627.515	188383.5
	Z	p	
	4.623	0.0001	

Commentary on differences Years 2 Placed and Unplaced, *learning environment*: the low p-value ($p < 0.05$) indicates that the difference in performance between Year 2 Placed and Year 2 Unplaced under *learning environment* architecture is significant.

Table 10.6.3 Descriptive statistics Year 3 (post-placement): *learning environment*

Cohort	n	M	SD
Placed (post-placement)	569	55.30	10.36
Unplaced	755	53.08	10.41

Table 10.6.4 U-Test (Mann-Whitney)Year 3 Placed & Unplaced, *learning environment*

	n	Mean Rank	U
Year 3 Placed	569	708.922	241211.5
Year 3 Unplaced	755	627.515	188383.5
	Z	p	
	3.837	0.0001	

Commentary on differences Year 3 Placed and Unplaced, learning environment: the low p-value ($p < 0.05$) indicates that the difference in performance between Year 3 Placed and Year 3 Unplaced under learning environment architecture is significant.

Table 10.6.5 Descriptive statistics Years 2 & 3 (intra-cohort differences): *learning environment*

	Year 2			Year 3		
Cohort:	n	M	SD	n	M	SD
Placed	576	54.32	10.92	569	55.30	10.36
Unplaced	768	51.90	10.91	755	53.08	10.41

Table 10.6.6 U-Test (Mann-Whitney) Intra-cohort differences, Years 2 & 3 Placed *learning environment*

	n	Mean Rank	U
Year 2 Placed	576	563.871	158614
Year 3 Placed	569	582.240	169130
	Z	p	
	-0.940	0.347	

Commentary on intra-cohort differences Years 2 & 3 Placed, learning environment: high p-value ($p > 0.05$) indicates that the difference in performance between Year 2 Placed and Year 3 Placed under learning environment architecture is not significant.

Table 10.6.7 U-Test (Mann-Whitney) intra-cohort differences, Years 2& 3
Unplaced, learning environment

	n	Mean Rank	U
Year 2 Unplaced	768	737.222	270890.5
Year 3 Unplaced	755	787.205	308949.5
	Z	p	
	-2.219	0.026	

Commentary on intra-cohort differences Years 2 & 3 Unplaced, learning environment:
the low p-value ($p < 0.05$) indicates that the difference in performance between Year 2 Unplaced and Year 3 Unplaced under learning environment architecture is significant.

10.7 Narrative on *Learning Environment* Results

Under the *learning environment* architecture the placement cohort performed significantly better on return to studies than its non-placement peers (Table 10.6.3: $M=55.30$ and $M=53.08$ for Placed and Unplaced respectively; Table 10.6.4: Mann-Whitney $p=0.0001$; $p < 0.05$). As with the work environment model, there is some evidence of prior-selection: the difference in academic performance in Year 2 is statistically significant in favour of the placement cohort - those who are stronger academically elect to do the placement (Table 10.6.1: $M=54.61$ and $M=51.90$ for Placed and Unplaced respectively; Table 10.6.2: Mann-Whitney $p=0.0001$; $p < 0.05$). When intra-cohort performances are compared (Tables 10.6.5, 10.6.6 & 10.6.7) over the two academic years, the observed positive difference for the Placement cohort between its Base Year performance and performance in Ordinary Finals is not significant (Table 10.6.5: $M=54.32$ and $M=55.30$ for Year 2 and Year 3 respectively; Table 10.6.6: Mann-Whitney $p=0.347$; $p > 0.05$); the enhanced performance of the non-placement cohort is statistically significant (Table 10.6.5: $M=51.90$ and $M=53.08$ for Years 2 and 3 respectively; Table 10.6.7: Mann-Whitney $p=0.026$; $p < 0.05$). There has been no enhancement of academic performance by the placement cohort relative to its own performance in the Base Year. The non-placement cohort has enhanced its performance significantly. In Chapter 11 possible interpretations and explanations for these results will be considered in greater depth.

10.8 Descriptive and Inferential Statistics: Inter-semester Performance, *Learning Environment Architecture*

The same sequence of procedures as carried out for the *work environment* architecture and the *learning environment* architecture are now applied to the inter-semester results of the *learning environment* (as part of the investigation into the possibility of motivational effects of the placement, rather than the architectural aspects). Summary results in the forms of tables of *descriptive statistics* followed by the *Mann-Whitney U statistic* are presented below for Semesters 1 and 2 of the *learning environment* model, Year 3, covering the various categories of cohort years and modes of study (placed / unplaced) which are derived from the hypotheses presented in Chapter 9 (9.1).

Table 10.8.1 Descriptive statistics, Inter-semester Year 3 Placed, *learning environment*

	n	M	SD
Semester 1	305	54.42	9.19
Semester 2	268	56.18	10.01

Table 10.8.2 U-Test (Mann-Whitney), Inter-Semester differences, Year 3 Placed, *learning environment*

	n	Mean Rank	U
Year 3 Placed (Semester 1)	305	268.982	35374.5
Year 3 Placed (Semester 2)	268	307.506	46365.5
	Z	p	
	-2.781	0.005	

Commentary on inter-semester differences Year 3 Placed, *learning environment*:

The low p-value ($p < 0.05$) indicates that the difference in performance between Semester 1 and Semester 2, Year 3, Placed, *learning environment*, is significant.

Table 10.8.3 Descriptive statistics, Inter-semester Year 3 Unplaced, *learning environment*

	n	M	SD
Semester 1	397	53.14	10.41
Semester 2	354	53.05	10.47

Table 10.8.4 U-Test (Mann-Whitney), Inter-semester differences, Year 3 Unplaced, *learning environment*

	n	Mean Rank	U
Year 3 Unplaced (Semester 1)	397	373.859	69419
Year 3 Unplaced (Semester 2)	354	378.401	71119
	Z	p	
	0.287	0.774	

Commentary on inter-semester differences Year 3 Unplaced, learning environment:
High p-value ($p > 0.05$) indicates that the difference in performance between Semester 1 and Semester 2, Unplaced cohort Year 3, learning environment, is not significant.

10.9 Narrative on Inter-semester Performance, *Learning Environment*, Placed and Unplaced, Year 3

According to the results presented in Tables 10.8.1 & 10.8.2 above there was a significant difference in the performance of the Placement cohort between the first and second semesters on their return from placement (Table 10.8.1: $M=54.42$ and $M=56.18$ for Semesters 1 and 2 respectively; Table 10.8.2: Mann-Whitney $p=0.005$; $p < 0.05$). With respect to the inter-semester performance of the Unplaced cohort in Year 3 (Tables 10.8.3 and 10.8.4) the difference in performance between the first and second semesters was not significant ($M=53.14$ and $M=53.05$ for Semesters 1 and 2 respectively; Mann-Whitney $p=0.774$; $p > 0.05$). In Chapter 11 a fuller interpretation of these results will be considered.

10.10 Summary of Results: General

Under *work environment* architecture it was found that there was no significant difference in the academic performance of interns in Degree Finals relative to their non-intern peers. One accepts the null hypothesis. There was some evidence of prior-selection favouring those undergraduates who opted for placement. Under the learning environment architecture there was a significant difference in the academic performance of interns in Degree Finals relative to their non-intern peers. One thus rejects the null hypothesis. There was also evidence of prior-selection favouring those who had opted for internships. Under learning environment architecture there was some evidence that placement undergraduates failed to add value to their academic achievement; in addition there was evidence that on return from placement, students performed less well in the first semester post-placement than in the second semester. In the discussion which follows in Chapter 11 these results will be discussed in terms of the extent to which architecture of placement contributes to academic performance, and the extent to which motivation is modified by placement.

10.11 Summary of Results in Relation to the Hypotheses

In Chapter 9, section 9.1, the hypotheses to be tested were presented thus:

- H0₁** Placement under work environment architecture will not lead to enhanced academic performance on return to studies.
- H1₁** Placement under work environment architecture will lead to enhanced academic performance on return to studies.
- H0₂** Placement under learning environment architecture will not lead to enhanced academic performance on return to studies.
- H1₂** Placement under learning environment architecture will lead to enhanced academic performance on return to studies.
- H0₃** Motivation of interns on return to studies will not be affected by placement under the learning environment architecture.
- H1₃** Motivation of interns on return to studies will be affected by placement under the learning architecture.

In the light of the results presented above in sections 10.5 – 10.13 one proposes:

Accept Null Hypothesis **H0₁**, reject Alternate Hypothesis **H1₁**

Reject Null Hypothesis **H0₂**, accept Alternate Hypothesis **H1₂**

Reject Null Hypothesis **H0₃**, accept Alternate Hypothesis **H1₃**

These findings will now be discussed in Chapter 11.

Part Three: Discussion, Conclusions and Recommendations

Chapter 11 Discussion of Results

11.1 Introduction: Towards Explaining the Findings

This researcher has defined and introduced the terms, *work environment* and *learning environment* architectures into the literature on work placement in higher education. The former refers to placement arrangements whereby the task of the placing institution is to provide the prospective intern with the opportunities to gain a range of work-related experiences which cannot readily be provided in situ in the academic domain. In practice, in part dictated by the needs of the placing university to have access to suitable hosts, this often leads to the university concentrating on preparing the student to meet the needs of the host. The success or otherwise of such internship arrangements will be judged by the general experiences and assessment of the host, as well as the general views of the intern, and not in any overt way which could be measured by, say, academic performance post-placement. By contrast, *learning environment* refers to the architectural features of a practicum which, consonant with much of the literature on learning (including work-based learning) and learning transfer, could reasonably be expected to elicit positive transfer of learning from the workplace to the academic domain such that it would be evidenced in enhanced academic performance by interns on return to studies post-internship. The task of this chapter is to provide a coherent explanation of the findings reported in detail in Chapter 10 and which are summarised in sections 11.2 and 11.3 below, and to relate these to the literature on learning transfer and to that of differences in the architecture of placement.

11.2 Work Environment Architecture: Statistical Findings

The statistical findings of Chapter 10 allow one to set-out three *stylised facts* relating to the academic performance of business undergraduates who have undertaken a one-year paid internship under what has been identified and defined by this researcher as *work environment* architecture (3.10):

- i. *Prior selection*: there is evidence of prior-selection of undergraduates who choose to take the internship: those who had elected to undertake placement were statistically stronger academically (Tables 10.4.1 & 10.4.2).
- ii. *Academic performance*: there is no significant difference in the academic performance of the placement cohort on return to studies when measured against their non-placement peers (Tables 10.4.3 & 10.4.4).
- iii. *Academic added value*: the placement cohort did not add value to its academic prowess in the time period of the work placement. This is evidenced by *intra-cohort difference* (Tables 10.4.5 & 10.4.6), in which there is no significant difference in the academic performance of the placement cohort between Year 2 and Year 3 (Academic).

(The above characterisation, based upon the application of the Mann-Whitney test to the work environment data sets as reported in Chapter 10, is supported by the results of applying the t-test of differences to the same data sets, with one exception: there appears to have been a significant difference in the performance of the unplaced cohort between its year 2 and that of year 3. These results are reported in Appendix 10A).

11.3 *Learning Environment Architecture: Statistical Findings*

The statistical findings of Chapter 10 allow one to set-out three *stylised facts* relating to the academic performance of business undergraduates who have undertaken a one-year paid internship under what has been identified and defined by this researcher as *learning environment architecture* (Chapter 3, sections 3.10, 3.12):

- i. *Prior selection*: there is evidence of prior-selection of undergraduates who choose to take the internship: those who had elected to undertake placement were statistically stronger academically (Tables 10.6.1 & 10.6.2)
- ii. *Academic performance*: there is a significant difference in the academic performance of the placement cohort on return to studies when measured against their non-placement peers (Tables 10.6.3 & 10.6.4).
- iii. *Academic added value*: the placement cohort did not add value to its academic prowess in the time period of the work placement. This is evidenced by *intra-cohort difference* (Tables 10.6.5 & 10.6.6), in which the difference in the

academic performance of the placement cohort between Year 2 and Year 3 (Academic) is not statistically significant, while that for its non-placement peer cohort is (Tables 10.6.5 & 10.6.7).

(The above characterisation, based upon the application of the Mann-Whitney test to the learning environment data sets as reported in Chapter 10, is supported by the results of applying the t-test of differences to the same data sets as presented in Appendix 10A).

11.4 Discriminating Between *Work Environment* and *Learning Environment* Outcomes

Based upon the statistical results reported in 11.2 and 11.3 above it is clear that the placement cohorts under both architectures share two characteristics and can be discriminated between on the basis of one characteristic. The shared characteristics are:

- i. the placement cohorts under both architectures exhibited evidence of *prior-selection* (Tables 10.4.1 & 10.4.2; 10.6.1 & 10.6.2);
- ii. there was no supporting evidence of *academic added value* (Tables 10.4.5 & 10.4.6; 10.6.5 & 10.6.6).

On the other hand the statistical results identify one characteristic which can be used to discriminate between the *work environment* and the *learning environment* placement: in terms of *academic performance* when compared with their non-placement peers, those students who took placement under *work environment* architecture did not perform significantly better than their non-placement peers, while those who undertook placement under *learning environment* architecture did (Tables 10.4.3 & 10.4.4; 10.6.3 & 10.6.4).

Figure 11.1 below summarises how the different architectures of placement compare with each other across the three characteristics identified in the statistical analysis.

Academic Characteristic	Architecture of placement	
	Work environment	Learning environment
<i>Prior selection</i>	Yes	Yes
<i>Better than non-placed peers</i>	No	Yes
<i>Added value</i>	No	No

Figure 11.1 *Shared and distinguishing academic features of both placement architectures*

11.5 Towards Explaining the Findings (1): Narrative of the Environmental Effects

The task of the following sections is to provide a coherent explanation of the above findings; one which is internally consistent with the stylised facts as presented above (11.2 and 11.3) and with the existence of shared and discriminating characteristics as identified in 11.4 above. This explanation should be capable of being linked to the literature and theories considered in Part One of the thesis: specifically to the literature on learning transfer and to that of the architecture of placement. The starting point for this analysis is what can be termed *the narrative of the environmental effect*: under both architectures, students who elected to undertake an internship were initially stronger academically than their peers who chose not to; in the case of work environment placement, the prior advantage enjoyed by the intern cohort was eroded by the time academic performance was again measured – at the end of Year 3 (Degree Finals) – some six months post-placement or eighteen months after it had

last been measured (at the end of Year 2). By contrast, in the case of learning environment placement, the prior academic advantage enjoyed by the placement cohort is still in evidence in the post-placement period of study. Thus in one architecture of placement prior academic advantage had been eroded relative to the non-intern peer cohort, while in the other it had not been eroded. Under both architectures, intern cohorts had not improved their position in the academic domain relative to their individual starting points – there is no evidence of *adding value* to academic attributes previously identified. One can then characterise this placement effect (or *association*) in the case of work environment as comprising an *erosion of advantage* and a *failure of transfer of learning*. In the case of learning environment placement, academic advantage had been maintained relative to the non-intern peer cohort: post-placement performance of the intern cohort was significantly better than that of their non-placement peers; however, the intern cohort had not improved its position in the academic domain relative to itself – there is no evidence of adding value to academic attributes previously identified (while there is evidence that the non-placement peer cohort did add academic value to its performance - Tables 10.6.5 & 10.6.7). One can thus, in the case of learning environment, characterise this placement effect (or *association*) as comprising a *maintenance of advantage* and of a *neutral* (or *weak*) *transfer of learning*. In sum, one is indicating that in the case of both architectures of placement there is no strong evidence for a positive and significant transfer of learning effect from the placement domain to that of the academic domain.

11.6 Towards Explaining the Findings (2): Failure of Transfer

Emerging from the literature on placement (which is characterised by a paucity of statistical studies and for which this the attempts to seed further such studies) there are four modes of interpretation which might illuminate one's understanding of the reported lack of evidence for positive learning transfer under both architectures:

- i. *Architectural intent*
- ii. *Modes of learning*
- iii. *Expectations*
- iv. *Motivation*

11.6.1 *Architectural intent: failure by design*. Bournier and Ellerker (1993) in highlighting the potential range of benefits inherent in *the idea* of the placement within academic programmes, argue that there is nothing guaranteeing that these will be realised in the placement in general. In saying this they are not simply arguing that badly designed placements will have negative effects on student learning (both in the workplace and on return to studies not least because of motivational effects). More forcefully, they are making the case that comprehensive institutional arrangements have to be framed in such a manner that the stakeholders – the universities, the students and the hosts – have a unified vision of what is possible within the internship and how it can and should be achieved through placement. There is explicit recognition of the diverse constraints on learning which will be experienced by the student during the placement: among other things, the placement cannot be viewed unambiguously as purely a learning experience; unless special arrangements are in place which offer the intern exempt status, the intern is first and foremost a member of the workforce sharing the obligations and goals of co-workers; moreover the exigencies of commercial and services-delivery imperatives will from time-to-time relegate formal learning (and training) to a subsidiary or incidental role. This explicit recognition of the constraints on learning leads logically to issues of “designing-out” the constraints (as far as is practically possible) through appropriate placement architecture. The starting point for designing-out learning constraints is planning and managing the internship through focusing on key relationships such as:

- i. that between the learning potential of the placement and the intended learning outcomes of the broader academic programme;
- ii. the structure and position of the placement within the programme;
- iii. the relationship between the operating environment and the processes of the placement on the one hand and on the other hand the structures and processes of the placing institution (Bournier and Ellerker, 1993).

This environmental analysis of the importance of architecture for learning is reinforced by Ramsden’s (1992) thesis on *context of learning*. This, it is argued, should be understood as not only including the subject-matter and the set of skills and other learning attributes that are being taught (or made available for transfer) in the distinctively different domains of the

university and that of the workplace, but also encompasses broader considerations such as the general and specific operations which are being undertaken in the institutions or firms. In addition to the structural characteristics of the placement having a powerful (positive or negative) influence on the learning that can be realised by the intern in the placement, Heller and Heinemann, (1987) found that the net effect of the architecture on transfer of learning is modified by the set of attitudes and values brought to the placement by the student to the internship. Thus a well-designed internship scheme is itself subject to constraints which are brought to the placement by the student and are a function of student motivation and expectations. If the student expects to gain in the transfer of learning process and the architectural features are in place which are specifically designed to elicit positive learning transfer, then, *ceteris paribus*, there is a higher probability of such transfer of learning taking place. The converse is also true: if the central features of an architecture of placement are not seen to be concerned with inter-domain transfer of learning and the undergraduate in placement has little expectation of there being a positive flow of learning transfer from the work domain to that of the academic, then there is less chance of it taking place.

11.6.1.1 *Architectural intent: work environment.* Where the architecture of placement is, as in the work environment model, primarily concerned with supplying an intern who meets the needs of the host, then the prescient undergraduate is less likely to expect there to be positive transfer from the workplace to the academic domain. By contrast, the perceptive undergraduate is more likely to anticipate positive learning transfer under the architecture which makes this an explicit intended outcome of the placement, such as should be the case under learning environment architecture. On a general level with regard to the defining characteristics of the placement, Ryan, Toohey and Hughes (1996) point to persistent problems with placements which are poorly structured “*resulting in experiences that may actually undermine learning*” (Ryan, Toohey and Hughes, 1996, p370), arguing that for positive transfer to be effected “*there must be a close and obvious (to the student) relationship between the theoretical and practical components of a course.*” (Ryan, Toohey and Hughes, 1996, p362). Returning then to the findings reported with respect to the work environment placement, one can argue that it is precisely the architectural features which contribute to the failure of transfer of learning as evidenced by the erosion of the initial

advantage shown by the placement cohort pre-placement (prior-selection), and the inability to distinguish statistically between the placement cohort and its non-placement peer cohort post-placement. By definition (see 3.11 and Appendix 10) work environment architecture is primarily concerned with the pre-internship preparation of the student for placement; that is, the placing institution having assessed the demands of the prospective host organisation, concentrates on fashioning the student in a manner which will increase his or her prospects of being chosen by the host. This is not to suggest that such preparation is superficial: placing institutions will typically invest considerable resources in the business of placement, whether these resources are part of the whole learning and teaching activities of the university, or resources which are specific to the placement unit and which address directly the acquisition by the students of attributes which will appeal to prospective hosts. The attributes which will appeal to the hosts, in addition to the assumed high general level of intelligence and aptitudes associated with “undergradateness”, will include a general set of transferable skills, and may have less to do with domain-specific attributes. (This assertion would need to be qualified in proportion to which a placement is an integrated part of a degree programme in which the demands of a professional body are required to be met - such as those of RICS or some of the professional engineering bodies such as the Institution of Electrical Engineers (IEE) which, in common with other such professional bodies, accredits degree courses in subjects relevant to electrical, electronic, manufacturing and information engineering at universities and colleges around the world <http://www.iee.org/TheIEE/about.cfm>). In the case in question in this thesis, the aforementioned qualification with respect to the requirements of professional bodies is not particularly salient: even where accountancy students were involved, the demands of the professional bodies apply only to the academic programmes of studies and the decision to undertake an internship is at the discretion of the undergraduate). The key point in this argument is that the role of the internship under work environment architecture is not seen by the stakeholders (placing institution, host and undergraduate) as being primarily to facilitate transfer of learning between domains. In particular it is not viewed as an opportunity to embed academic learning by practice; nor is it seen as facilitating the enhancement of academic values upon return to studies. Indeed the architectural features are not aligned with those which might promote practices in the workplace capable of being translated into the academic domain. The manifestation of this

non-alignment between the academic learning structures and those of the workplace, is in the fact that little is demanded of the student with regard to providing evidence of learning (or of testing of such learning). Instead, the main demands upon the placement student consist of meeting the host requirements in relation to conduct and performance; and on return to studies there will be some mundane and formulaic requirements such as the provision of a diary or report which will be a largely descriptive account of the placement experience. For those who supply an excellent or poor quality report in their placement experience, there is usually nothing to distinguish them one from the other, and certainly not in respect to being assessed on the placement as a learning experience which can be assessed on conventional academic criteria. It can be seen then that under work environment architecture any enhancement of academic performance upon return to studies is likely to be serendipitous and not by design. In which case the results reported above of a failure to exhibit evidence of enhanced academic performance relative to non-placement peers is unsurprising. That this failure takes three forms is indicative of a significant opportunity cost inherent in the work environment arrangements: from a position of prior selection whereby the placement cohort were stronger academically than those who did not take up internships, one sees evidence of this advantage being eroded post-internship with nothing to distinguish academically the placement cohort from its non-placement peer cohort; moreover, even in relation to its own status pre-internship, the placement cohort has not added value to its academic attributes. This researcher proposes that the evidence is consistent with a design failure of the placement architecture.

11.6.1.2 Architectural intent: learning environment - designing for success? If, as Bournier and Ellerker (1993) argue, badly designed placements will have negative effects on student learning (and learning transfer) then one should be able to indicate the minimum requirements of a placement architecture for successful learning transfer. These are outlined in 11.6.1 above and are alluded to as being absent in the case of work environment placement in 11.6.1.1; and will be assumed to be understood as mainly present in what follows in this section on learning environment placement to avoid repetition (see Appendix 10). In contrast to the work environment placement, the structural characteristics of the learning environment are anticipated to have a powerful and positive influence on the learning that can be realised

in the placement, and this in turn is modified by the set of attitudes and values brought to the placement by the student to the internship (Heller and Heinemann, 1987). When the student expects to gain in the transfer of learning process and the architectural features are in place which are specifically designed to elicit positive learning transfer, then, *ceteris paribus*, there is a higher probability of such transfer of learning taking place. The internship under learning environment architecture can be presented by the placing institution to the other key stakeholders (host and undergraduate) as being an efficient mode for facilitating transfer of learning between domains (in both directions). In principle then, it should be an opportunity to embed academic learning by professional practice; the corollary being the facilitation of the enhancement of academic values upon return to studies. However the results reported in Chapter 10 and reprised in 11.3 above for the learning environment architecture are not fully consonant with the above predictions: while there was maintenance of initial academic advantage relative to the non-placement peer cohort, there was a failure of academic value added (by contrast with the non-placement peer cohort). Thus there is a need to look beyond (and within) architectural design to better understand the reported results - a statement which is now no less true of the work environment results.

11.6.2. *Modes of learning and failure of transfer.* If the results reported for both architectures of placement cannot be fully understood in terms of the architectural features which characterise each of the internship arrangements, then one needs to consider additional features of the placements which are not covered by the surface features of architecture. From the literature on learning considered in Part One of this thesis, emerges several linked propositions relating to learning strategies, types of learning and modes of transfer. Included in these related concepts are: *deep* and *surface* learning, and *near* and *far* transfer (and of *low-road* and *high-road* transfer). These will now be considered in the contexts of work environment and learning environment architectures respectively.

11.6.2.1 *Modes of learning and failure of transfer: work environment.* In 11.6.1 above it was tentatively proposed that the failure to find evidence of positive transfer of learning from the workplace to the academic domain under work environment could be laid at the door of the

architecture of the placement. However, it was then shown that a similar proposition could apply to that of learning environment placement; in which case it is necessary to look beyond the structural arrangements which characterise the differing placement architectures and explore the inner dynamics of learning and learning transfer as they may operate within specific placement architectures. In Chapter 4 the distinction between *deep* and *surface* learning (Marton and Säljö, 1984) was linked to the concepts of *near* and *far* transfer (Cornford, 2002): the prospects of any transfer being higher to the extent to which there has been deep learning of the skills, competencies and higher cognitive operations required in the transfer activity. It was also seen that there are solid grounds for believing that even near transfer is more difficult than is generally understood (Yelon, 1992, Cornford, 2002). Starting then from the perspective argued above that the architecture of the work environment internship is not framed to elicit positive learning transfer, and taking the view that the differences between the two domains of the academic and the internship under work environment are so pronounced that any positive transfer of learning from the latter to the former domain would represent a formidable case of far transfer were it to occur, one proposes that the results reported in Chapter 10 (Tables 10.4.1 through to 10.4.7) and in section 11.2 above are explicable in terms of differences in modes of learning leading to failures of transfer. One does not need to invoke psychological theories of *interference* (e.g. Wickens 1972, Kellogg, 1997) to explain the evidence of negative transfer as manifested in the erosion of the initial advantage enjoyed by the placement cohort pre-placement (Tables 10.4.1 and 10.4.2); although the results reported by Turney (1988) and Au Yeung et al (1993), in which student teachers and engineering students respectively found that placement practices undermined their faith in the theoretical material delivered in the academic domain, can be interpreted as an environmental form of interference rather than the cognitive type of interference considered by Wickens and others. An alternative - though equivalent - explanation can be framed in terms of Salomon and Perkins' (1987, 1989) distinction between *low-road transfer* and *high-road transfer*. Realistically, the potential for low road transfer (where a "*a skill has been practised to the point of automaticity in one context [and] is spontaneously elicited by a new context*" Cox, 1997, p46) is not strong unless the academic programme strongly shares common features with workplace practices experienced by the intern. This might be the case in such as the bio-sciences for example (Duignan, Lush and

Gomez, 2004), or possibly even in some areas of business-related programmes such as elements of real estate management where the programme content and the stipulations relating to internship are in significant part determined by the requirements of gaining professional recognition (<http://www.rics.org>). But even in a case such as this, low-road transfer would entail rather narrow placement experiences – say the application of routines (for example the rules governing property valuations). A feature of the business undergraduates in the research cohort is the scope for broad and flexible internships – interns could expect their host to place them in a department or division broadly consonant with their programme specialism (for example, marketing specialists in the marketing division or in sales; HRM students in personnel, finance students in the finance division or in purchasing) while their functionality would not be too narrowly circumscribed. With respect to high road transfer - deliberative mindful abstraction from one learning set to another learning set which does not exhibit obvious similarities with the initial situation (Salomon and Perkins, 1987, 1989) – while the epistemological principles which underpin higher education are expected to engender such attributes in their undergraduates, there is sufficient evidence from the literature (Snyder, 1971, Miller and Parlett, 1974, Marton and Säljö, 1984) that students, when confronted with new material (new tasks or unfamiliar problems to be solved), adopt coping strategies which are associated with surface learning and from which the potential for transfer is generally low. For the intern to effect transfer from the workplace to the academic domain, several stages would be required pre-transfer:

- a *planning stage* in which the intern formulates a strategy for recognising opportunities for learning;
- a *stage of reflection* in which what is to be learned and what can be learned realistically, is reflected upon;
- a *transfer stage* in which metacognitive strategies inform the learner how to bundle the material into a form that can be transferred.

All of this presupposes that the intern is an *active learner* and everything that term implies – the intern would need to have been instructed in learning and transfer strategies and how these can be applied in differing circumstances, as well as in self-evaluation techniques that focus upon the monitoring of the processes involved in the learning and transfer strategies and of the outcomes (Cox, 1997, Cornford, 2002). In terms of the results reported in Chapter

10 and given in précis form above in section 11.2 for work environment internship, it is clear that the conditions for far transfer are not in place; nor are those which are encapsulated in the terms *low road* and *high road* transfer, thus one should not be surprised at the lack of evidence for enhanced academic performance post-internship. In brief, then, while the results reported for the work environment architecture are consistent with the design features of the architecture, they can also be explained in terms of what has been grouped together in this section, as modes of learning and learning transfer.

11.6.2.2 *Modes of learning and failure of transfer: learning environment.* By the same reasoning explored in 11.6.2.1 above for work environment placement, if the architecture of the learning environment does not give rise to significant enhancement of academic performance, then one has to consider that there are other features of the placement which are at work and which in a sense impede the transfer of learning processes. This has been presented above as features relating to the inner dynamics of learning and learning transfer, in particular invoking the related concepts of *deep* and *surface* learning and *near* and *far* transfer (and of *high-road* and *low-road* transfer). In the absence of evidence to the contrary, it is reasonable to assume that the general profile of undergraduates in each of the placement cohorts under the different architectures is broadly similar; in which case the remarks relating to student learning practices under work environment placement should equally apply to the learning environment cohort (in relation to learning strategies, the potential for near and far transfer and for high-road or low-road transfer, the arguments apply *pari passu*). Similarly, with respect to the aforementioned broad and flexible nature and experiences of the internships: under both work environment and learning environment the actual practices of the intern in performing tasks are likely to be similar and independent of architecture (though one admits that the intended outcomes are expected to be different under the different architectures). In which case formal learning becomes a secondary (or even residual) consideration, and far transfer will not easily be achieved. This pessimistic conclusion on the scope for positive learning transfer between domains (especially in the direction from the internship to the formal academic) does not mean that the earlier arguments in favour of designing an architecture for learning transfer are null and void; instead one is moving to a position in which such an architecture of placement is a necessary but not sufficient condition

for effective transfer. By contrast, the preceding analysis suggests that the only surprising thing about positive transfer of learning under a work environment architecture would be if it took place at all. One is then arguing that in contrast to the learning conditions under the work environment placement, the architecture of the learning environment internship is configured such as to create conditions favourable to the positive transfer of learning between the two domains. It may facilitate this transfer because among other things, it operates to reduce the perceptual differences between the two domains of the academic and the internship (differences which under work environment are perceived by the interns as being so pronounced as to represent a formidable challenge for any expectation of significantly positive transfer of learning to occur). However to achieve such an outcome on a predictable basis, one would require other characteristics to be present – included among which would be the planning and reflective strategies associated with metacognition of the transfer process noted in 11.6.2.1 above. And while learning environment architecture is not sufficient to guarantee transfer of learning, it has the advantage over that of the work environment internship in that part of its rationale is that there is a recognition (implicit or explicit) that transfer is a difficult process and requires conscious and deliberative strategies for it to be effected. In such a strategy the intern is not simply a workplace cipher, but is importantly an *active learner* - as long as the intern has been instructed in learning and transfer strategies and how these can be applied in differing circumstances, as well as in self-evaluation techniques that focus upon the monitoring of the processes involved in the learning and transfer strategies and of the outcomes (Cox, 1997, Cornford, 2002). If, in the presence of a learning environment placement architecture, no strong evidence of learning transfer is found, then one needs to look at other features of the placement, as has been done in this section, in order to better understand the results.

11.6.3 Asymmetrical expectations and performance: work environment. Under work environment architecture there is little in the placement planning and arrangements which would leave any of the stakeholders rationale grounds for assuming that there will be a positive correlation between the internship and academic achievement on return to studies. However, with respect to host expectations of the benefits that might be gained from engaging in internship schemes, there are clearly positive expectations at work: implicit (and

sometimes explicit) in such host engagement is the belief that there are aspects of undergraduate training and learning in the academic domain which are transferable across the domains - problem-solving strategies, skills acquisition and so on - and which carry with them benefits to the host. At an early stage in the placement process - when the university placement officer persuades companies to offer internships, there will be an explicit expression of these benefits which are embodied in the undergraduate intern. Higher cognitive qualities embedded in the student will be bound within an overall package of generic transferable skills. The placement officer sells the undergraduate to the organisation on the basis that the undergraduate is at this stage well-equipped (if unfinished) to contribute to the organisation's goals, as a direct result of the academic (and other) skills embedded in the student. However, there is an asymmetry in this relationship, in the sense that the firm is not expected to enhance the academic performance of the undergraduate when he or she returns to studies. The university "sells" the undergraduate to the host on the basis of what the host can reasonably expect in terms of contributions of the undergraduate to the goals of the host organisation; the host in accepting the intern does not undertake to return to the university a student who will be better equipped for academic achievement. There is little in transfer of learning theory which would lead one to expect that there would be positive transfer from the host to the academic domain post-placement under the work environment arrangements for internship. Indeed as will be argued below (11.6.4) there are sound grounds for believing that poor placement architecture might lead to negative transfer of learning, in particular where unreasonable expectations of positive transfer are disappointed.

11.6.3.1 Symmetrical expectations and academic performance: learning environment.

As with the work environment internship, the general principles relating to what it is the undergraduate takes into the internship apply also to the learning environment architecture: in addition to the higher cognitive skills embedded in the student under academic processes prior to the placement and which the intern is expected to take into the internship, there will also be a portfolio of generic transferable skills. The prospective intern is presented (or "sold") to the organisation as being well-equipped to contribute to the host's goals, as a direct result of the academic (and other) skills embedded in his or her intellectual attributes. But in contrast to the work environment architecture, under learning environment arrangements, the

nature of the reasonable expectations which can be held by the three key stakeholders in the internship are made explicit: the placing organisation convinces the host that the undergraduate will be an effective contributor to its efficient functioning; the host in accepting the structural features of the placement arrangements (which are effectively the parameters of the contract which underpin mutual obligations, (Rousseau, 1995)) and to the extent that these arrangements involve a significant component of what can be termed enhanced learning elements, then the host is effectively engaging in a formal learning process, one outcome of which can reasonably be anticipated to better equip the intern for academic performance post-internship. The final strand in these arrangements which provides a symmetry of expectations is in the form of the expectations of the intern for the placement: under learning environment architecture, the undergraduate can reasonably expect to reap a range of benefits from the internship, among which will be the enhancement of academic performance post-placement. Thus one should reasonably expect that, given the architectural features of the learning environment placement in conjunction with the associated expectations shared by all three main stakeholders, there should be positive transfer for learning from the work domain to the academic and that this will be evidenced in enhanced academic performance relative to non-placed peers. That this is not strongly the case as reported in this thesis, suggests that one has to examine one final element in the learning and transfer processes – that of *motivation*. This will be considered in the next section.

11.6.4 *Motivation, academic performance and work placement.* In Chapter 6 theories of motivation and its role in learning and transfer of learning (Yelon, 1991, 1992, Rosen, 1991, Cornford, 2002) within the placement context were considered in some detail. The decision to take placement was interpreted as the manifestation of a range of motivational factors which are driven by the expectation of reaping a set of well-defined benefits which are commonly associated with the internship, among which might or might not be, that of enhanced academic performance upon return to studies. However, the internship under any architecture, is a dynamic process in which initial expectations may be modified by changing conditions in the practice of the placement – brought about perhaps by the exigencies of changing market conditions to which the host has to respond, or more mundanely, perhaps by

changing personnel which sees the host suddenly need to replace an individual employee. In addition, motivation itself is a dynamic and fluid psychological force which responds to different environmental factors. Thus, in the context of the internship (under any architecture) such is the dynamic interaction of motivation with that of the practices of the internship, that there may be a separation of the set of initiating motivational factors (which were salient in the placement decision) and that of the dominant ambient motivational set in the host organisation, such that there is ample scope for the net effect of motivation to be unpredictable in terms of how it informs the student's attitude and performance both in the workplace and upon return to studies. Specifically, there may be a complex interaction between these motivational sets which will be manifested in performance differences, which may or may not be obviated by placement architecture.

11.6.4.1 Motivation, academic performance and work environment. Starting from the basis that there is a positive motivational set which informs the decision to seek an internship, one has to consider how this might be modified by the architecture of the placement and the practices with which the intern has to deal in the internship proper. In other words, can the lack of strong evidence of positive learning transfer (under either architectures) be in part explained by events and processes within the internship which cause motivation to be reduced; and might this reduction in motivation carry-over from the internship back into the academic domain post-internship? Rosen, (1991) found that low motivation in the workplace is associated with the individual perceiving that he or she has little or no control over the work environment. By contrast, workers tend to be more satisfied and productive if they participate in decisions about how work procedures are developed and implemented; if they are given problems to solve without being given the solutions; if they are taught a range of skills rather than a single one; and if they are given individual responsibility and broad recognition for performing well. Conversely there is low motivation in the workplace when the individual perceives that he or she has little or no control over the work environment. The placement student during the internship under work environment architecture is largely passive in terms of the conditions which defined the placement architecture, and may have little control over the tasks and procedures that they are expected to engage with. By definition, under work environment architecture the role of the intern is to fit the needs of the

host. Heller and Heinemann (1987), while acknowledging that placement architecture (*structured vs non-structured* placement arrangements) could have an influence on the general performance of undergraduates, argue that individual differences in the attitudes and values held by placement students would also be a powerful influence on learning outcomes of the placement. They argue that the highly motivated placement student who anticipates academic benefits post-placement, is more likely to exhibit evidence of positive learning transfer in the direction: *placement domain* \rightarrow *academic domain* than would be the case where there was low enthusiasm towards the placement and where the expectations of academic benefits were not high. However, this researcher proposes that such an assumption has to be qualified on two aspects: sound placement architecture with well-defined anticipated outcomes leading to an experience which the intern regards as enriching *and which meets the expectations of the intern* is likely to reinforce positive motivation; but equally (and in proportion), poor placement architecture which leads to poor placement experiences (*“resulting in experiences that may actually undermine learning”*, Ryan, Toohey and Hughes, 1996, p370) is likely to lead to a de-motivation of the intern and a loss of transfer of learning from the workplace to the academic domain. Thus the corollary of the Heller and Heinemann (1987) proposition will also hold: where a placement has disappointed the expectations of the intern, there may be a significant loss of motivation which impacts upon the academic domain on return to studies. In Chapter 6, (6.4, 6.5 and 6.6) it was seen that motivation in the placement is subject to modifying forces (positive and negative) both during and after the internship, such that the post-placement performance of the returned intern is a function of (among other factors including individual attributes) *the net motivational effect*. The general value of the placement (and hence the sign of the net motivational effect) as judged by the student will be a function of the *expected value* of the placement and the *realised value*: the greater the difference between expected value and realised value (what this researcher has termed in 6.7, *the outcome-expectations gap*), the greater the change in the motivational force. If the expected value is greater than the realised value, there will be a diminution of motivation. Conversely, if the realised value of the placement exceeds the expected value then the motivation of the student towards the course in general will be enhanced (in advance of the return to studies – an important qualification which will be further considered below). A diminution of motivation will be reflected in

negative learning transfer from the placement to the academic domain. In relating motivation as a factor in the potential for positive learning transfer, one can see that it is also linked to architecture: the student who is well-prepared to meet the needs of the host organisation may nevertheless be disappointed under work environment architecture precisely because part of the needs of the student in the placement are not being met – that is, the expectation that the internship will bridge a gap between the domain of the theoretical and that of the practical has not been realised. Indeed, as has been seen in Chapter 1, (1.6; see also 5.2) the exigencies of commercial and public service provision among hosts will often take precedence over the learning aspirations of the intern and the training intent of the host organisation. Under work environment architecture, in which formal learning agreements do not take a central role, there will be much scope for the motivation of the intern to be undermined, and this will be reflected in low learning transfer. When the architecture of the work environment internship is examined (Chapter 3, section 3.11; and Appendix 10), it can be seen that there are factors which should positively influence student motivation *pre-placement*: the active promotion of placement by the placement unit from their arrival in the university and through to their decision to seek an internship, as well as the support arrangements for gaining places. But with respect to the maintenance of motivation during the placement, other than pastoral visits by the placement tutor, there is little in the demands placed upon the student by the placing institution which obviously impact upon motivation in a positive direction. In addition, the demands placed upon the student in the immediate post-placement period – the submission of a logbook for which no credit towards final assessment is given – do not obviously have a strong motivational component that would feed through into learning transfer and academic performance. In addition to issues relating to transfer of learning, this work has also argued that questions of motivation should be considered in any treatment of performance on return to studies post-placement. One would add that under work environment architecture, in parallel with the conditions that seem to promote low motivation among workers in the workplace (Rosen, 1991), the student may feel equally alienated from the processes and systems of the academic domain in terms of the conditions which frame the placement experience and the determination of rewards and general measures of achievement. Moreover when the undergraduate is translated from the university to the workplace, the sense of alienation may be further heightened by – at least for some of the time – the undergraduate

experiencing a sense of being a transient. The placement student is a being in suspension between two distinctively different worlds - the enterprise or public organisation on the one hand, and the university on the other; each domain is characterised and distinguished one from the other, by distinctively different systems and processes as well as value and rewards systems which may be antithetical to each other. In the workplace, for motivation to be maintained, there needs to be an acceptance of the core values, which will include commitment to the goals of the organisation and acceptance of the reward system (Rousseau, 1995). For the transient placement student it may be difficult to identify wholly with these core values, while the degree of discretion in the conduct of functions will be limited if the architecture of the placement does not allow for it, or, if due to the exigencies with which the host is faced, the intern is not allowed to follow the path that was intended for him or her, and to which he or she had committed in the pre-placement arrangements. In the university the core values might be perceived by the student as examination success, and the reward system similarly is seen as the same – the arguments of the “hidden curriculum” no less (Snyder, 1971; Miller and Parlett, 1974, Marton and Säljö, 1984). Is there then a demotivation of the student that is manifested on return to studies, and which leads to a failure to reap the potential benefit of enhanced academic achievement? Alternatively, is there something in the learning processes of the placement that act to inhibit academic achievement upon return to studies? Is it then the case that being neither one nor the other, the returning student under-achieves in Finals, a cost no less heavy in that it does not appear obviously so?

11.6.4.2 Motivation, academic performance and learning environment. As with work environment placement, the general conditions which influence intern motivation apply to that of the internship under learning environment: at the pre-placement stage the undergraduate who chooses to take a placement is motivated by a belief that the internship brings a set of benefits which are not readily available in the formal academic domain. Similarly, the intern’s motivational aspect will be modified by the placement experience and its relationship to pre-placement expectations, and this in turn may affect academic performance upon return to formal studies post internship, with the arguments relating to *the outcome-expectations gap* applying with equal force to the learning environment

architecture. Thus, if, as has emerged from the results presented in Chapter 10 and reprised at the outset of this chapter, a learning environment architecture does not appear to have delivered the anticipated enhancement of academic performance which would be the evidence for positive transfer of learning from the internship to the academic domain, then one should consider that there may have been a motivational effect (as with the work environment analysis) which has nullified the architectural intent of the learning environment placement. Many of the surface features of the internship arrangements under the learning environment should have a positive influence on motivation: in contrast to the work environment placement, under the learning environment architecture the role of the intern is not simply to fit the needs of the host – there is an expectation which will be shared by the three main stakeholders in the placement, that the success or otherwise of the placement will be judged on criteria which, while including the effective functionality of the undergraduate in the allotted placement role within the host, will focus on the placement as a learning experience which is integral to the overall programme of studies. In which case, part of the evidence to evaluate the success or otherwise of the placement should be discernible in terms which are consonant with the usual measures of academic success - exam performance and other generally accepted means of evaluation of academic attributes. The architecture of the learning environment provides fertile preconditions for positive motivation: Heller and Heinemann (1987) argue that the placement architecture influences the general performance of the undergraduates but that this will be reinforced by individual differences in the attitudes and values taken by the intern into and from the internship and that it is the interaction of these elements which will determine the learning outcomes of the placement and the degree of learning transfer. The highly motivated placement student who is prepared for and anticipates academic benefits post-placement, is more likely to exhibit evidence of positive learning transfer in the direction: *placement domain* \rightarrow *academic domain* than would be the case where there was low enthusiasm towards the placement and where the expectations of academic benefits were not high. A priori, the architecture of the learning environment should be a positive influence on undergraduate motivation: even where this proposition has to be qualified in terms of the value of the *outcome-expectations gap* (see 6.7 and 11.2.3 above), sound placement architecture with well-defined anticipated outcomes leading to an experience which the intern regards as enriching is likely to reinforce positive motivation.

However, in the face of the evidence which is not strongly supportive of a positive transfer of learning effect, one still has to consider that other features in the relationship between the placement under learning environment and that of the academic domain may have triggered a net motivational effect which is less positive than one would have anticipated a priori on the basis of architecture alone. One can admit of the possibility (indeed if the arguments as to the importance of architecture are accepted, then one admits of the *probability*) that under the learning environment, the successful internship leads to positive motivation during the internship itself. This will also lead to a generally positive attitude to the programme of studies, on the grounds that the placement is delivering to the undergraduate all of the positive and enhancing experiences that had been promised in the literature and in the general selling phase of the placement. (One does not need, at this stage of the argument, to invoke the possibilities that the exigencies of the commercial and public services systems may interfere with the idealised plans of the internship - see 1.6, 5.2 & 11.5.4 – in principle under learning environment internship there are well defined contingencies within the architecture which should in part override or at least mitigate the exigencies of commercial and public service provision among hosts, which if left unchecked and unplanned for, would lead to the functionality of the intern as worker taking precedence over the internship as a learning experience, and thus reduce the prospects of learning transfer). One then poses the question: how might it be possible for a generally positive state of affairs relating to undergraduate motivation to become one in which there may be negative motivation? Two categories of explanation suggest themselves,

- i. *The academic and the profane*
- ii. *Post-placement blues*

Taking each in turn. Students who have taken a placement - especially where it has been hugely enjoyable – may find the transition back to the academic domain less than stimulating. Such a psychological impact may arise from the nature of the work – there are many studies which indicate that practical experience undermines faith in theory (e.g. Turney, 1988, Au Yeung et al, 1993, Ryan, Toohey and Hughes, 1996). Equally, students upon return from extended internship, find themselves having to re-establish old friendships and coalitions, their social relationships and experiences will have been largely formed in the workplace over the preceding year, while many of their peer cohort will have graduated or

will be one year in advance in terms of studies (those who entered university at the same time and who elected not to take the internship). Such experiences, if combined, may lead to an attitude which is manifested in a reduced motivation towards the academic. In principle, the learning environment architecture should reduce the differences between these domains, and to the extent that it achieves this it will be evidenced in enhanced academic performance upon return to studies post-placement, *unless other factors intervene*. It is precisely because of the absence of strong evidence under learning environment that one is considering the possibility that motivation has been reduced, and that this loss of motivation is in some way related to the placement experience. The factors which could be involved include:

- i. The placement was a disappointment and did not live up to expectations;
- ii. The placement was such a success that in contrast the academic experience post-placement suffered by comparison;
- iii. Personal factors: financial and social relationships were augmented by the placement, and the loss of these impacted negatively on motivation towards academic studies on return.
- iv. A loss of motivation on return to studies occasioned in part at least by the “culture shock” of moving from the world of work back to the academic domain.

In this section one has been concerned to consider how one’s understanding of how motivation acts upon learning and learning transfer might aid understanding of how internship under learning environment architecture has not been accompanied by evidence which would suggest a strongly positive transfer of learning from the internship to the academic domain. In the next section some evidence of an indirect nature will be presented which will be interpreted as suggesting that even under learning environment arrangements, student motivation may be negatively affected upon return to studies.

11.6.4.3 *Some evidence on motivation: learning environment.* Most definitions of motivation imply that it is a state of being which cannot be directly observed. One makes inferences about an individual’s motivation from what one observes in their behaviour. In which case it can be treated as an intervening variable whose existence can only be surmised by considering the difference between the initial state of an organism and another state which has arisen out of a change in behaviour. In the context of this thesis, in essence one is

interested in the academic performance of certain cohorts of students at different points in their programmes of studies. In particular, starting from a position in which one anticipated enhanced academic performance for interns under learning environment – which expectations were not completely fulfilled – one has posited the possibility that a diminution of motivation might help explain the “failure of architecture”. In this section two sources of evidence are presented which can be interpreted as being consistent with the general characteristic of motivation as being not readily capable of being directly observed and measured. In the first instance a statistical analysis of differences in inter-semester performance for the learning environment cohort was used. (The nature of the data sets for the work environment placement cohorts made it not possible to discriminate between semester one and semester two results). The results, reported in Chapter 10 (10.9 through 10.13) indicated that there was a significant difference in the performance of the placement cohort between the first and second semesters on their return from placement (Tables 10.9.1 & 10.9.2); while for the inter-semester performance of the unplaced cohort in Year 3 (Tables 10.11.1 & 10.11.2) the difference in performance between the first and second semesters was not significant. This is interpreted as being indicative of low initial motivation in the immediate period of studies post-internship; an interpretation which is consistent with the analysis of 11.6.4.2 above, in which the low motivation may decay (become less negative with the passage of time) as the student gets used to the academic domain by the time the second semester arrives. Secondly, ancillary material obtained from a questionnaire administered to the learning environment cohort on return from the internship was analysed to assess how the interns perceived their placement experience in terms of expectations pre- and post- placement (Appendices 11 and 12; it was not possible to administer such a questionnaire to the cohorts studied under work environment: at the time this research was being initiated those involved had graduated). The survey material indicated that only 42% of the respondents described themselves as being *highly motivated* towards their academic studies in the immediate post-placement period; while the remainder (58%) described their motivation towards academic studies as either *moderate* (32%) or *poor* (26%). These results are consistent with an often noted observation among placement officers that returned interns, for a variety of reasons relating to both positive and negative aspects of the

internship, display reduced motivation in the early period of their return to the academic domain. Among the anecdotal evidence are the suggestions that:

- i. the placement has been so successful that the student wants to return to the work domain as soon as possible;
- ii. the student has lost the habit of studying;
- iii. changed financial and social experiences – the student as student compared with the student as corporate worker;
- iv. the work experience was a poor one and the student is disillusioned with his/her choice of course career;
- v. the workplace experience undermined faith in the theoretical (academic) elements of the programme (Turney, 1988, Au Yeung et al, 1993, Ryan, Toohey and Hughes, 1996).

11.7 Summary: Placement and Performance – Architecture or Motivation?

In reporting the results of Chapter 10 for the academic performance of placement undergraduates on return to studies, this thesis has identified that the architecture of placement herein termed *work environment* is associated with a failure to elicit positive transfer of learning from the internship to the academic domain. This failure of transfer is doubly manifested in that the placement cohort could not be distinguished from their non-placement peers in terms of a superior performance in Finals, and in terms of their having failed to add value to their academic attributes between their pre- and post-placement academic years. Similar results were found in the case of *learning environment* placement: while the placement cohort maintained its initial academic advantage over its non-placement peer cohort, this was not augmented over the period of the placement, indicating weak evidence of positive transfer of learning from the placement domain to the academic. Because it had been anticipated that the two architectures would be associated with distinctive academic outcomes, and because this was not unequivocally the case, it has been suggested that even in the case of learning environment internship, the architecture is a necessary though not sufficient condition for eliciting positive transfer of learning from the internship to the academic domain. (In the case of work environment internship, this thesis argues that were there to be evidence of enhanced academic performance post-placement it

would have been serendipitous). In such circumstances then, one considered it necessary to go beyond and within aspects of the placement arrangements, and this led to the identification of four interrelated dimensions to the problem: those of *architectural intent*, of *modes of learning*, of *expectations* and of *motivation*. With respect to understanding the failure of transfer in terms of *modes of learning*, employing the related concepts of deep and surface learning on the one hand, and those of near and far transfer on the other, it is argued above that such are the differences in the cognitive demands placed upon the intern in both domains, under both architectures, that inter-domain transfer is problematic. This is particularly so in relation to the work environment architecture since this does not explicitly introduce the intern, pre-placement, to the concept of learning transfer and does not include any treatment of metacognitive strategies or training for transfer. On the other hand, metacognitive strategies should be part of a well-conceived learning environment architecture, in which case there is still a need to look at other dimensions of the placement to better explain the results which indicated weak transfer of learning. With respect to the role of *expectations* in learning transfer, it is argued above that in the case of work environment there are asymmetrical expectations in place, in that while the host expects a well-prepared and cognitively equipped student to meet their functional needs, there is not a rationally-based expectation on the part of the student or the university, that on return to studies the student will perform better than would have otherwise been the case. However, as with architectural intent, in the case of the learning environment internship, there is a rational basis for both the student and the university to anticipate enhanced academic performance post-placement. That this is not strongly the case in this study, suggests that there is another factor (or factors) at work which impedes the positive influences of both the architectural intent of the learning environment and the positive role of expectations. The prime candidate for explaining the results reported in Chapter 10 and reprised for both architectures in 11.2 and 11.3 above, and which emerges from this research is that of the role of *motivation*. Under the work environment architecture, the scope for reduced motivation both during the internship and in the post-internship period is manifold, with the plasticity of the placement being determined not by the intellectual needs of the intern, but by the exigencies of the market-driven and other pressures which inform the processes and practices of the host. In such circumstances there is an increased likelihood that the expectations of the undergraduate

will be disappointed in the placement with all that entails for reduced motivation and reduced performance. With respect to motivation in the learning environment internship, there is a strong a priori case for believing that the motivational aspects which inform the intern at the pre-placement stage and during the placement (assuming that the host has honestly complied with the implicit contract of the architecture) should be significantly positive, with the latter reinforcing the former. In this respect the architectural arrangements can be seen as a bulwark against the intellectual needs of the intern being overridden by the exigencies of the market-driven and other pressures which inform the processes and practices of the host. In such circumstances there is an increased likelihood that the expectations of the undergraduate will be largely met, and this in turn is a recipe for maintaining a positive motivational aspect which will carry over into a successful internship and (one would assume) into enhanced performance post-internship. However, a deeper examination of what can happen to motivation in the immediate post-internship period (on resumption of studies) led to the conclusion that even a successful internship under learning environment could be associated with a loss of motivation towards formal studies. This argument was given some support by the provision of statistical and survey material. In which case one is led to the conclusion that motivation, in all of its complexity and dynamism – a function of the complex interaction of a myriad of diverse environmental and personal attributes – may override the most well-conceived architecture of placement, and significantly decrease the probability of an internship leading to positive learning transfer from the work domain to that of the academic.

11.8 The Internship and Net Transfer of Learning: Some General Considerations

In sections 11.1 through 11.7 above, the researcher has sought to explain the reported differences in academic performance under the different placement architectures in terms of a common set of analytical devices. Specifically these were: *architectural intent*, *modes of learning*, *motivation*, and *the role of expectations*. In the remainder of this chapter one will broaden the scope of the analysis beyond the confines of the categories examined above with the aim of developing some of the issues of training and learning which were introduced in the literature review and which will shed further light on the differences between these and their role as between the workplace and the academic domain. As a starting point one might take Holding's (1991) contention that transfer is universal to acts of learning; thus one should

not assume that because the statistical evidence for both architectures of internship is not strongly supportive of enhanced academic performance post-placement, that no transfer of learning has occurred. An alternative interpretation is that there has been varied transfer of learning and that some of the values might be negative (5.4). These considerations apply equally under work environment and learning environment as will now be explained in the remainder of this chapter.

11.8.1 Workplace learning and competencies. *Competencies* are behaviours that are considered to be necessary to the effective conduct of an activity or a specified work role (Ashcroft and Foreman-Peck, 1994). In placement, the learning environment is radically different from that of the university: the primary function of the workplace is not teaching or learning, it is the operation of the business either for profit or, in the case of public service intern hosts, for the efficient delivery of services. Even to the extent that formal training is given in the workplace, the facilitator of learning may not be one whose primary role is that of teacher. Furthermore, the attitude of the learner (the intern) in the workplace may differ from that in the university, and will be a function of the nature of the workplace and the operational processes of working, as well as the nature of the tasks that have to be learned and effectively managed by the learner, as well as other factors such as the nature of the contract between the intern and the host (Chapter 7; Rousseau, 1995), as well as the individual attributes and attitudes brought by the student to the placement (see Barrick and Mount, 1991; Herold et al, 2002, on the influence of *Big Five* traits on transfer of training). How students arrive at competencies in the workplace will usually differ significantly from the style and nature of learning that is at the centre of higher education. For example the trainer in the workplace may be untrained as a tutor; the student may not be given time to reflect upon, and to discuss expected outcomes; in the university on the other hand, it is axiomatic that the good teacher

“is someone who can use learners' concepts; challenge students' thinking; set goals; encourage independence and responsibility in learning; maintain dialogue; give meaningful feedback; and monitor progress.” (Ashcroft and Foreman-Peck, 1994, p28)

It is not to denigrate workplace learning to argue that this is not the prime intent of the workplace tutor; however the emphasis on competencies in the workplace may be at the

expense of higher-order learning as understood and valued and measured in the academic domain.

11.8.2 Higher order cognitive processes and workplace exigencies. In the workplace the function of systems is multiple and includes: to ensure the efficient delivery of the goods and services for which there is a demand from the marketplace (or in the case of public sector hosts, the delivery of services for which the organisation has a statutory obligation); the auditing of costs and revenues to enable the organisation to strive for increased efficiency; systems which ensure the organisation is in full compliance of legal and voluntary standards of behaviour in relation to customers, suppliers, owners and workforce; the monitoring of changes in market conditions in order to respond flexibly and to remain a viable entity. When taken together, the rationale for systems can be interpreted as that which is concerned with reducing risk at every level – not withstanding the role of entrepreneurship in the dynamics of the marketplace. When this is related to the function of the individual worker, including that of the undergraduate intern, the initial period of training will be concerned with inducting the intern into the organisational system (or set of sub-systems). In terms of the distinctions between modes of learning, one would argue that the effect of systems-driven learning (the essence of the functionality of WBL) can be characterised as comprising enhanced performance of competencies, surface learning and low-road transfer, all of which have their commercial and social value. Higher order cognitive processes on the other hand, can be characterised as having elements of deep learning, high road transfer and problem-solving capabilities (see 5.16 above) which stretch beyond drawing-down system responses to irregularities which occur from time-to-time in the workplace (say having to handle an order for a product which has an element of customisation). One can argue that in the academic domain, the learning philosophy which characterises HE is the inculcation into the student of attributes which, although having a significant domain-specific component (the difference between a business programme and, say, one in the bio-sciences), will also have universally applicable generic characteristics which resolve upon meta-cognition and the provision of mental algorithms which have wide applicability to problem-solving, in particular where the problems have a high component of novel characteristics (as opposed to working through, say, a back catalogue of events and the responses which were situationally-

elicited in the past and which were found to be effective). In which case, in an exam-based system of assessment (the academic domain), the attributes which are developed successfully in the internship may not be manifested in enhanced academic performance. Thus, while there may be a sustained and positive difference in performance which favours the intern cohort over its non-intern peer cohort, (and which anyway might have been discernible pre-internship and is manifested in some prior-selection), this initial advantage may not be further augmented during the internship; in which case it is manifested as a failure to add academic value. This of course is not the same as arguing that the placement was worthless – rather it is an issue of differences in what is being valued and what is being learned.

11.8.3 Placement and transfer of learning: training for what? The conditions for transfer of learning are complex, and are a function of (among other things), the extent to which the sought-for-transfer involves *near* or *far* transfer, as well as the nature of the training and what it is the trainer thinks the intern has to be trained for. It was seen in Chapter 5 that even in the case of near transfer (Cornford, 2002) one cannot assume automaticity of transfer; and moreover, for training to be successful, there may need to be *mixed skills transfer* (section 5.5) in which there are elements of competencies which can usually be learned on a routinised basis and which have some of the attributes of motor skill development, as well as elements of higher order skills which have a strong cognitive component and which cannot usually be trained for using the same procedures as for motor skill development. In other words, the learning transfer that is to be developed in the internship and which might have a positive impact on academic performance is likely to have elements of near and far transfer. Consider the case of a business student who is training in accountancy and who takes up an internship programme that is not directly related to that narrow field of learning – say in general management of production, or procurement or training or events organisation? Training in accountancy has a quite focussed task orientation, while general management competencies will draw from a broader range of skills including HRM, Engineering, Quality Management, Science etc. (Taylor et al, 1982). If the accountant intern is placed within an accountancy section of the host, then one would expect some positive transfer in both directions, since the qualities of the pre-intern programme and those of the WBL in the internship itself can be characterised as having low-road transfer opportunities (high

goodness-of-fit between the academic learning structures and demands and outcomes and those of the WBL structures and outcomes, as well as sharing common criteria for gauging task success). In terms of the above remarks regarding system-induced responses (11.8.2) it is the essence of low road transfer that it is characterised by “*a skill [which] has been practised to the point of automaticity in one context [and] is spontaneously elicited by a new context*” (Cox, 1997, p46). On the other hand if the accountancy intern is placed in a non-accountancy function – general management, procurement, training etc - then the opportunities for low road transfer are lessened, and one wonders the extent to which the academic structures of learning (characterised as high-road / deep learning / problem-solving structures) might remain undeveloped during the internship or indeed may be degraded through lack of use or perceived “lack of relevance to the job” (a phrase much loved by students with reference to their studies and work experiences). In this conception of the problem, it is the non-academic structures involved in learning system responses, and the specificity of the WBL that is engaged in (and the accompanying task performance and its assessment in the workplace) which colours the cognitive development of the intern; but it is a development which will remain stunted as far as its resolution can be gauged in formal academic measures of attainment (unless architecture is configured precisely to deal with this problem). In terms of the central hypotheses and the statistical outcomes that are reported in Chapter 10, one should consider the extent to which, rather than a failure to add value under both architectures, and a question of whether WBL degrades learning that comes through academic structures and assessments, it is a failure to detect added value in the learning transfer.

11.8.4 Differences in modes or differences in what is to be measured? The argument proposed by some universities and other interest groups engaged in the placement process, that internship can enhance academic performance upon return to studies, can be paraphrased as the proposition: *learning transfer from the workplace domain to the academic domain will be positive*. However, as has been argued and developed above one needs to establish the nature of the types of learning structures involved in the differing domains, their relationship to each other and specifically pose the question: is the difference between academic and placement performance a question of differences in learning modes, or should it be seen as a

difference in what it is one is measuring at the outcomes level? In essence the answer to these questions resolves upon issues relating to training and the extent to which there has been explicit consideration of the need to train for transfer of learning. In the work environment architecture this was not an issue: the task of the university pre-placement was seen as being primarily to prepare the student for the internship; specifically, to prepare the student to meet the needs of the host organisation. Thus it would have been indeed antithetical to the predictions of transfer of learning theory had there been an enhancement of academic performance upon return to studies under work environment architecture. In the case of the learning environment architecture however, the case is less clear cut: the characteristics of this architecture which most notably distinguish it from its institutional predecessor are that it explicitly addresses the question of expectations of learning outcomes from the placement experience, and is in part designed to increase the potential for positive transfer. It is in this respect that transfer of learning theory, as modified by Cornford (1991, 2002) and Yelon (1992) among others, can be cited: to the extent that interns have some expectation of enhanced academic performance from their placement experience, and to the extent that there is explicit or implicit training for transfer built-in to the placement architecture, there will be a greater probability of finding evidence for positive transfer upon return to formal studies post-placement. To the extent that the evidence for such transfer is weak in the case of the learning environment internship, it may be that it is not so much a problem of transfer, but one of measurement. This will be considered further in Chapter 12.

11.9 Results Discussion: Summary

This chapter, in discussing the results reported in Chapter 10 has considered a range of explanations for the statistical findings. These fall into two inter-related categories: explanations which call upon aspects of learning theory including transfer theory, and issues of motivation. There were three central findings:

- i. Differences in the architecture of placement are not strongly associated with differences in academic performance post-placement.
- ii. Transfer of learning between distinctive domains cannot be assumed to be automatic. Even in the case of near transfer, automaticity cannot be assumed. In the case of far transfer – the category which is perhaps most apposite to the case

of transfer from the internship to the academic domain – training for transfer, it is argued, becomes axiomatic.

- iii. Motivation, both in the placement and in the academic domain post-placement, is likely to be a key variable in accounting for differences in performance. Given the complexity of motivation and its interaction with performance, future paths of research into its role in internship should look at what happens to motivation during the internship, as well as how it might change on return to studies.

Chapter 12 Conclusions and Recommendations

12.1 Preliminary Remarks

The principal theme of the thesis has been to examine a particular set of claims with regard to the benefits which undergraduates might reasonably expect to reap from an extended period of placement that is integral to their academic programme. The nature of this examination has been to explore and make transparent the theoretical assumptions which are implicit in the claim that such an internship will lead to enhanced academic performance, and to test empirically for the existence of such a relationship. This chapter reflects upon the findings discussed in Chapter 11, and by reference to the main body of the thesis identifies the main contributions of the work. In addition, the limitations of the thesis will be considered, and by highlighting these, suggestions will be derived for the direction that new research should take, building upon the positive contributions of the thesis.

12.2 Contributions to Knowledge

The thesis makes several key contributions to theoretical and practical aspects of the conduct, the structure and the performance effects of the extended work placement within undergraduate programmes. Specifically these contributions to the understanding of the internship as a mode of learning are in terms of: *theory of the internship*; *internship design*; *issues of motivation*; *understanding the opportunity cost of the internship*; *internship and learning*.

12.2.1 Contributions to the theory of the internship. This investigation made explicit for the first time the implicit and untested assumptions which lie at the heart of claims that work placement will lead to enhanced academic performance. It was shown that increasingly the drive towards the vocationalisation of HE in the United Kingdom is associated with the expansion of work placement opportunities for undergraduates throughout the sector, and that this promotion of the internship as a mode of learning is associated with increased claims for improved academic performance. The thesis has demonstrated that such claims imply certain assumptions about the nature and direction of transfer of learning. By making these hitherto untested assumptions explicit, and by placing transfer of learning at the core of the

investigation, one has effectively developed a richer and more comprehensive model of the internship as a mode of learning within HE. Integral to this epistemological development has been the critical exposition of the potential role that placement architecture can play. By identifying and defining for the first time, two distinctive forms of placement architecture, one has married the theoretical axioms derived from learning transfer theory to practical constructs which should help one's understanding of the conditions which are likely to increase the probability of enhanced academic performance for undergraduates who have returned to formal studies after an extended period of placement. This amounts to no less than a practical template (or model) for designing for placement success, and for enhancing the portfolio of benefits generally associated with the internship.

12.2.2 Contributions to the design of placement. By identifying and defining for the first time the distinctive architectures of placement in terms of *work environment* and *learning environment* configurations, and by showing the extent to which each can be associated empirically with similarities and differences in academic achievement, the thesis makes an important contribution to the design literature on placement. Hitherto, prescriptive models of placement have been largely based upon principles which can best be described as intuitively attractive to those who are engaged in promoting placement in HE and who have some practical experience of HE (perhaps as graduates and now as professionals) and experience of the workplace, and who are in the main enthusiastically partisan towards placement. However, such prescriptions are not based upon an explicit theoretical model and moreover have largely lacked any significant evidence base. When taken individually, the researcher finds little to quarrel with the prescriptive elements which colour what are in the main promotional materials. However, one of the central findings of the thesis – that architecture has the potential to make a difference academically - amounts to more than just a collation of “dos” and “don’ts” about placement design whose counterparts will be found in the prescriptive materials on placement: it effectively offers a template, which, if used judiciously and where the inner dynamics (especially issues of motivation – see 12.2.3 below) are understood by all stakeholders in the placement process, will significantly increase the probability that the placement will lead to enhanced academic performance. Moreover, as a practical model whose worth must be judged on the criteria upon which all

models in social science are judged, this approach will help explain past outcomes of placements and predict future outcomes based upon conditions set in the present by those who configure placement arrangements. As part of such a contribution to one's understanding of placement as a learning mode, the thesis offers also the beginnings of an evidence base.

12.2.3 Contributions to understanding the impact of placement on motivation. While it is the case that the more perceptive publications on the role and practice of placement in HE justifiably allude to the importance of the post-placement period in embedding the benefits of successful internships, there has been an almost total neglect of the impact of placement upon motivation per se in the post-placement period. The researcher has found no published evidence-based studies on this aspect, and yet it is a commonplace issue in discussions with placement professionals. The thesis initiates a discourse on how placement might impact upon motivation when interns return to formal studies, and lays the groundwork for further empirical work. In the study, this aspect of placement is developed as a testable sub-thesis which is deceptively simple in its central proposition: internships – good and bad – are likely to lead to a partial, and possibly temporary, diminution in student motivation towards formal studies; such motivation will be at its lowest in the initial stages of the post-placement period during which the returned intern struggles to adjust to the formal academic regime. The results provide evidence of such a diminution in motivation by finding inter-semester differences in assessment performance: semester one performance is significantly lower than that of semester two (whereas there is no such difference for non-placement peers). By identifying this effect and relating it to structural features of both the placement and the academic domain post-placement, the researcher has indicated how such a diminution of motivation might be minimised. In so doing, the central tenet of the thesis is reinforced: that architecture of placement can be crucial in realising the potential for enhanced academic performance. Additionally the concept of architecture of placement has been expanded beyond the merely structural configuration of placement arrangements and relationships, such that it has to be seen as an all-encompassing structure which embraces the pre-placement domain, the placement domain and equally the post-placement learning domain in terms of both practical performances and in terms of a theory of learning.

12.2.4 *The opportunity cost of sub-optimal placement architecture.* By drawing attention to the potential of placement provision for the enrichment of the student experience beyond the portfolio of benefits normally associated in the literature with well-designed and managed internships, the thesis identifies what can be termed the *opportunity cost* of poor placement architecture. This is understood as the difference in benefits between what is realised in the placement and what could be realised; it is revealed in terms of differences in academic performance between what is achieved and what could have been achieved. In terms of the evidence presented in the thesis, the opportunity cost of the placement under the work environment is the lack of enhanced academic performance both as between the placement cohort and its non-placement peer cohort, as well as the failure of the placement cohort to add significantly to its academic value-added. This concept has no less value in terms of analysing the opportunity cost of the learning environment architecture: this is revealed by the significant difference between the placement cohort and its non-placement counterpart; and also by the failure to add value to academic performance by the placement cohort in relation to its own performance. Additionally, the evidence presented on inter-semester differences under the learning environment indicates that even in this case there is under-utilised potential for enhanced academic performance – the first semester performance is significantly below that of semester two and this represents room for improvement which could be achieved by better configuration of the architecture which plans for the post-placement motivation effect. By taking this approach, the thesis emphasises the continued importance that universities need to place on traditional academic values at the same time as they are embracing more market-oriented value-systems; in so doing one is rejecting the proposition that there is a necessary conflict between learning in the work domain and that of the academic domain.

12.2.5 *Internship and learning.* The conventional wisdom on the internship and learning - which the thesis challenges - is that the work placement is a unique element within an academic programmes of studies, which is to be distinguished from all other elements in terms of the nature of what is to be learned, and in terms of how such learning takes place. This distinction is sometimes made in terms of that between content learning skills and that of adaptive learning skills – the former being associated with the academic domain; the latter

with the work domain and placement. The thesis suggests that while these distinctions can be of analytical value in the correct context, they do not have a universality, and that the learner in different domains may utilise different learning modes or strategies contingent upon his or her preferences rather than those dictated mechanistically by the context. In which case there is no insurmountable barrier to inter-domain transfer of learning; and while such barriers may exist and indeed may be formidable, the adoption of the appropriate strategies will reduce the barriers. Among such strategies – broadly understood – is the configuration and adoption of a placement architecture which is precisely designed to promote inter-domain transfer of learning.

12.3 Further Research Directions

12.3.1 Research direction: vocationalisation in HE. Despite the vigorous promotion in the UK of widening access to HE through differing modes of vocationalisation - including the expansion of opportunities for quality placement experiences - the thesis has argued that to date there has been little published empirical research on the existence of, the quality of, and the direction of *transfer of learning* arising from the placement process; and that this expansion is being promoted without due diligence on the likely impact of it on the main activities of the university educational processes. There is also a paucity of published studies examining the relationship between differences in the placement architecture and differences in the range and quality of the benefits which are conventionally associated with well-structured internships. For advocates of internships as a unique source of a portfolio of well-defined benefits to undergraduates, which complement the growth and development of specifically academic attributes which are nurtured within Higher Education, it is incumbent upon them to demonstrate that such benefits are unequivocally available in the internship. Additionally, they should be concerned with how the effectiveness of this process is mediated by the architecture of the practicum. For those advocates who go further and argue for enhanced academic achievement arising out of the practicum the problem is four-fold:

- i. There is an immediate need to demonstrate that in general, academic achievement is enhanced by placement – and that means the compilation of an evidence base.
- ii. There is the need to explain the transmission mechanism of the learning transfer that is claimed. This will involve not only reconciling difficulties of near transfer

but more problematically, explaining how far transfer is facilitated by the architecture of the placement.

- iii. There is a need to explore how varying the architecture of the placement might optimise the flow of benefits to the undergraduate – and that implies more research than is currently available from published sources.
- iv. And finally there is a more immediate and less theoretical problem for advocates of internships: the consumers (to use the current parlance which dominates discussion of matters in HE) are voting with their feet. The thesis has presented primary evidence of an emerging trend of a fall in the take-up rate of the increased pool of opportunities for quality extended placements.

The above problems are not confined to those who would engage in research on the matters identified in the thesis. They are equally problematic for the two main advocates of internships within higher education: the government and UK Universities. How they respond to this cannot be seen in isolation from the analysis presented in the thesis. As an initial step to addressing this issue they need first of all to recognise that a problem of confidence in the benefits of placement exists – implied by the trend fall in the take-up rate of extended internships. Next, the advocates of the expansion of placement schemes need to consider what lessons can be learned from research such as presented in the thesis. For example, does a *laissez-faire* approach to placement arrangements lead to wasting scarce resources? It would appear from the evidence presented herein, that the range of potential benefits from the internship in unstructured conditions will be significantly under-unrealised; in particular there will be a failure of transfer of learning from the workplace to the academic domain – a failure which represents a significant opportunity cost to the individual intern, to the university, and to society which ultimately funds HE. On a positive note, the thesis has provided support for the view that those who undertake extended placement under formally structured arrangements maintain an augmented level of achievement compared with their non-placement peers. There is also support for the view that those who choose to undertake extended (one year) internships are in the first instance drawn from the stronger section of the undergraduate body; this, can be interpreted as a discerning vote of confidence in the promoters of expanding placement provision among the stronger candidates. (However as

previously noted, there is a need to explore the contrary evidence on reduced numbers seeking placement). In addition, while it has not been central to the thesis, there is an abundance of evidence that internship leads to a higher level of graduate employability. From the theoretical analysis of the thesis, there is some support for the argument that architecture of placement has the potential to enhance academic achievement. All of these positive elements which arise out of the main body of the thesis can be harnessed to further promote the value of work placement in terms of the set of uncontroversial benefits which are associated with internship, while indicating how the internship architecture might also be configured to increase the probability of accessing that narrower specific objective of enhanced achievement in the academic domain. With regard to this latter aspect, it is of course axiomatic that it must be founded on a sound evidential and theoretical basis, in which the limits of achievement are also made transparent. To do so, can only serve to reduce the scepticism of that substantial body of academe which remains inured to the benefits of the internship; not to do so is to reinforce the prejudices of those same academics.

12.3.2 Research direction: prior selection. Some evidence was found that indicated that the placement may lead to prior-selection – students who chose to undertake an internship (under both architectures) tended to exhibit indications of being stronger academically prior to engaging with the internship. This might suggest that such students are also more discerning in terms of engaging with activities which they perceive as being likely to bring additional benefits beyond those associated with non-sandwich degree programmes, among which might be employability and enhanced academic performance. Research is required to find out why academically stronger students tended to elect to take placements. Associated with such research would be investigations into whether such students believed that their expectations had been met or had been disappointed. Such research could be linked with that noted in the next section: the post-placement environment and motivation.

12.3.3 Research direction: the whole placement environment and motivation. There was some evidence that while placement students under the learning environment model tended to perform better than their non-placement peers in academic terms, their non-placement peers seemed to show more “gain” or value-added in academic performance. Further

research is required into this relationship, including issues of student motivation pre-placement as well as that on return to studies, the role that can be played by learning contracts, and how the placement might be assessed and given full academic accreditation. In addition, performance in the post-placement environment was found not to be uniform: the evidence that suggested that there might be lower motivation towards studies in the immediate post-placement semester, and that there was a gain in motivation in the second semester, needs to be further considered. This thesis has argued that the level of motivation on return to studies may be a function of motivational influences pre-internship (including the role of expectations in forming motivation), as well as being a function of motivational influences during the internship. These postulated relationships (for which some evidence has been provided in the thesis) offer a rich avenue of research opportunities which, apart from increasing one's understanding of the impact of internship on student performance, will contribute to the body of theory in the field of motivation. For example, as has been shown in this thesis further research in this area is required to identify the nature of the loss of motivation in the immediate post-internship period and as to why it recovers later in the academic year. Such research would inform the configuration of that element of the placement architecture which relates to the post-placement environment and activities.

12.3.4 Research direction: differences between degree programmes. One of the limitations of the thesis has been that it is concerned with a specific population which was engaged in a particular discipline – business programmes in a specific institution. It was suggested that there is some evidence that the type of degree programme may determine the extent to which the placement experience mirrors or matches the academic experience. Research jointly authored by the candidate, (Duignan, Lush and Gomez, 2004), showed that there was a significant difference in the placement effect on academic performance between business interns and bio-sciences interns – in the latter case the internship was found to be the single best predictor of performance in finals. Setting aside the specifics of these cases, there would appear to be fertile grounds for further research into differences in experience between programmes. It is conceivable that eventually one might be able to construct a typology of programmes, whereby one might have a priori grounds for believing that some programmes with internships are more likely to enhance academic achievement than others –

independently of architecture. With respect to the institutional specificity of the thesis, research which considered similar programmes across different institutions would help identify factors which are more likely to be institutional-specific, and others which have general applicability.

12.4 Policy Proposal: Academic Credit for Placement

12.4.1 *Bridging the domains*. In failing to find a positive impact of placement on the academic performance of students under what has been termed herein *work environment* architecture, it was further proposed that by suitably reconfiguring the architecture of the placement to create a *learning environment* – one which would bridge the gulf between the academic domain and the WBL domain - the full learning potential of placement would be realised even in the academic sphere, and that this would be reflected in enhanced performance upon return to studies. The evidence provided in the thesis provides some support for this proposition – suggesting that the qualities which are required for successful performance in the placement domain, and the skills and competencies which are engendered by successful placements can be translated into academic performance. However, to the extent that placement students, even under learning environment architecture, exhibit modest evidence of adding value to their own academic attributes, then this represents evidence of under-realisation of the full potential learning transfer. The thesis has argued in the previous chapter that this can be best understood as a by-product of continued reliance on exam-based methods of assessment. This in turn suggests that what is being measured in terms of academic attributes under an exam-based system are not sufficiently close to the attributes which are equated with WBL and which measure workplace success - in which case the architecture of the placement alone cannot be expected to fully elicit learning transfer which is detectable in traditional academic terms. It follows then that there are some hard questions to be asked including a set which addresses the separate roles of the student as learner and the lecturer-supervisor as facilitator of learning, as well as a set which questions the continued viability of traditional methods of assessment within an HE system which is being transformed in every other respect. The former set of questions can be dealt with under the heading of *self-directed and active learning*; while the latter will be considered in the broader context of *academic credit for placement*.

12.4.2 Active and self-directed learning: redefining internship roles. As the learning environment internship is associated in this study with modest evidence of transfer of learning then this suggests that the separate roles of the intern and the lecturer-tutor deserve closer scrutiny in the light of the different theories of learning and teaching which have been considered elsewhere in this thesis. A theme of the thesis has been that the traditional self-image of the university has had to be seen to be changing in order to meet the demands of society, in particular as these reflect changes in economic demands (through market forces) and in the demands of government. In such circumstances it is also reasonable to reflect upon the extent to which the roles of the intern and that of the lecturer-tutor are also subject to modifying forces – some of which will be theory-led and some of which will be associated with the broader changes within the sector. The hybrid nature of internship learning opportunities – elements of academic learning which may be crystallised in market-driven workplace experiences; or novel WBL which the intern cannot yet place in an academic-theoretical context – is an ideal environment for the student adopting a non-traditional role as learner: rather than being a passive “receiver of information”, he or she has the opportunity to adopt the strategies of the self-directed and active learner. The former, according to Hiemstra (1994), is characterised by the student’s willingness to take control of learning (and the consequences for his or her actions) and involves such processes as evaluating personal needs, responsibility for the acquisition of learning resources, decisions relating to learning activities, and the reflective evaluation of what has been learned. Associated with the processes of self-directed learning, active learning refers to the activities of processing and applying existing information as well as engaging in activities which lead to discovering information and new ways of applying it (Meyers and Jones, 1993). It is clear that to the extent to which the internship encourages (or provides greater potential for) self-directed and active learning, then the greater are the changes required in the function of the lecturer-tutor (or placement supervisor): instead of the traditional responsibility for communicating course material and the determination of what is to be learned and how it is to be evaluated, some of this responsibility is shifted to the student (Felder and Brent, 1996); in which case the lecturer-tutor becomes more of a facilitator and mediator in the learning processes (though there may remain elements of the traditional role in the early stages in which the students have to be weaned away from the expectations that all useful knowledge - or knowledge

uniquely valued by the HE system - resides in the lecturer and can be transferred by a process in which the student is largely a passive recipient). At the same time as these changes in the specific functions of the lecturer-tutor and of the student, with assessment procedures being typically linked to learning objectives in the academic domain implies that to assess WBL might call for changes in learning objectives which are specifically linked to WBL and to changes in the assessment procedures associated with this process. One possible route (though one which might be impractical on cost terms) would be for the specification of individual learning objectives in which the prospective intern and the tutor-facilitator (along with the host agent) are co-designers of the internship architecture including the learning objectives.

12.4.3 Academic credit for placement. The dilemma confronting universities as they strive to be “more relevant” (or to produce *employability* in graduates), is the eternal one of the relationship between academic standards and values and those of the world outside the universities. To a large extent these issues are essentially ones which hinge upon both philosophy of education and philosophy of life. The questions are easy to frame: what is education about? Is it about enrichment of experience and understanding? Is it about economic purpose and consumption? These questions cannot be answered here. The thesis is not framed as a critique of the principles of employability, nor of the philosophy of internship per se. It is posited upon the *given* which is the tradition of the placement within a particular sub-sector of HE (the new universities primarily; but a practice which the older universities are being prevailed upon to embrace). This of necessity gives rise to conflicts of purpose, of understanding, of commitment and of evaluation, some of which have already been touched upon in the thesis. The main conflict exposed in the thesis, and one for which a possible solution emerges from the analysis herein, is that which has been presented as a conflict between the understanding of processes and systems which are learned and valued in the work domain, and the knowledge and understanding which is valued and assessed in the academic domain. One route that should be considered within the context of the placement degree programmes, is that of giving full academic credit for placement (and for other forms of WBL). This would have the merit (on the assumption that it can be done without compromising academic standards) of reinforcing the values taught in the classroom or lab,

while marrying them to the standards of the commercial and public services world. Thus, ideally, the perceived gap between the university learning structures and those of the experiential structures would narrow until it became insignificant. In which case the real benefits of placement would include enhanced academic achievement, as well as all the others for which there is generally consensus. This in turn raises the question of how to evaluate such periods within the framework of conventional measures of academic achievement, (or indeed as to whether such conventional methods of assessment have any place in the evaluation of performance and learning in the internship) as well as the question of whether this in turn would impact upon academic performance on return to university. Full academic credit for placement will require a radical rethink as to the goals and structures of the placement (Benett, 1989, Danks and King, Marshall and Cooper, 2001), including consideration of:

- i. What learning outcomes can be best achieved through the placement?
- ii. The extent to which a formal curriculum for the placement will be required.
- iii. The use of learning contracts.
- iv. The duration and structure of the placement.
- v. The use of co-curriculum activities (seminars on workplace experiences etc).

12.4.4 Basic principles of credit for placement. In addition to principles enumerated in 12.4.2 above, there is a further crucial question to be answered: how to reach agreement on assessing that which has been learned in the workplace but which is to be demonstrated in the academic domain. Any moves towards full academic credit for learning in the internship should have as a core principle which is not for negotiation, that WBL will be subject to the same standards of critical assessment as those which are applied to formal assignments and exam-based assessments. Of course it is easy to state this as a principle, but less obvious as to how this can be implemented. One way might be that of setting a project or dissertation which has to meet three basic requirements:

- i. An explicit treatment of the principles of transfer of learning including a critical assessment of metacognitive strategies with examples drawn from the internship.

- ii. A critical evaluation of some aspect of the internship which is placed within an academic framework of comparison – which normally would be expected to focus on an academic programme area which relates to the undergraduates specialism.
- iii. An evaluation of the internship experience as a mode of learning, with a treatment of how what has been learned relates to (or undermines) critical theory.

For example, a business economics intern specialising in HRM might chose to undertake a dissertation which focuses on how the host responds to changes in supply conditions of labour and would be expected to relate this to labour market theory. For the dissertation to meet the principles outlined above, it would need to address in the first instance what learning outcomes were anticipated and how these were to be monitored and related to the processes of learning itself. This would also have some consideration of the characteristics of the host as a learning environment: was formal training given? what was the status of the instructor(s)? what priority did the host give to training in the workplace (and a consideration of how the intern arrives at this judgement of the host). Next, the central body of the dissertation would need to have a descriptive element - containing information on how the host conducts its procedures which are the focus of the dissertation – and a core analytical section which will introduce the key elements of the theory which the intern has judged to be apposite for the task in hand. These two elements – the descriptive and the analytical - will form the synthesis of the analysis. The intern will relate the central section to his or her learning experience, in which a judgement will be arrived at by the intern in relation to what has been learned, and what is transferable in this learning. Finally, the assessment of the dissertation should be jointly shared between the university assessor(s) and an appropriate representative of the host institution, with prior and transparent agreement between these stakeholders on the assessment criteria. The foregoing is only indicative and sketched out. Many other issues would need to be dealt with, such as when the dissertation should be submitted and what its value would be in terms of CATS (or ECTS) points. However the basic principles would be as outlined above.

12.5 Issues of Policy for Stakeholders

If academic performance is affected by placement then clearly there are some fundamental issues of policy which have profound implications for the main constituencies engaged in the

placement process: the undergraduates, (interns and non-interns alike), the universities, the employers and the government. Each of these are considered below.

12.5.1 Policy and the students. The most obvious issues which arises from the results and analysis presented in the thesis relate to the student body – placement and non-placement students alike. There are issues of transparency in that if there are significant differences in academic achievement as between *sandwich* and *non-sandwich* students, then this information should be readily available so that informed choices can be made in the pre-placement period. In particular, where matters of degree classifications are concerned, it would be obviously in the students' interests to know the direction and extent to which placement is expected to affect academic performance. If placement does not enhance academic performance then the question arises as to whether it can be configured to do so. Given these unresolved issues, there is a need to examine the learning processes and potentialities of the internship and its relationship to academic tasks. More research on the benefits (and costs) of the placement is required. Without any significant evidence base on the different outcomes between the various models of placement in currency, there is no rigorous basis for discriminating between them. Moreover, while this thesis has been concerned with a particular form of internship (*thick sandwich* form), and with a specific set of undergraduates (business students in a specific institution), there is a need to examine the performance of interns who have experienced alternative forms of internship, and who are drawn from different programmes of studies and across diverse institutions. It is proposed that students on all types of university programmes which offer opportunities for placement should be given access to all relevant information on the expected benefits of placement, and that this should be evidence-based with the implications drawn clearly and presented concisely in relation to the benefits claimed by the sponsors of placement programmes. This would include statistically-based inferences which could legitimately be drawn on the likelihood of the placement enhancing performance in Finals, including any impact on degree classification.

12.5.2 Policy and the employers. In offering placement-opportunity programmes, universities believe they are providing a broader range of benefits to undergraduates than

would otherwise be the case in traditional degree courses, as well as conforming with the wishes of government. For employers, in offering placement opportunities, they are motivated by a range of considerations, including:

- i. Being seen to be socially responsible as part of a particular community; one way being to engage with the HE providers in the locale.
- ii. Conforming with the HE goals of government which has in part been shaped by the demands of the employers for a more vocationally oriented HE system.
- iii. Enlightened self-interest within a framework which recognises the nature of externalities.
- iv. Opportunities to pre-test the near-future graduate labour market and to establish markers within that market.
- v. Opportunities to tap into a ready supply of temporary labour capable of undertaking tasks above the mundane.

If interns are led to anticipate a certain portfolio of benefits from the internship, among which might be enhanced academic performance, then employers need to be informed of these specific expectations and how it is they are supposed to arise. In addition, employers need to be consensual in the claims made by universities and other bodies for the internship, and that means that they should be engaged at every stage of the internship including the configuration of the architecture and the setting of the goals and the expected outcomes, as well as the post-internship period (which is not generally the case at the moment). As part of this redefinition of the role of the host, there is a need to engage representatives of the hosts in the assessment stage where academic credit for placement is being offered.

12.5.3 Policy and the universities: should universities promote placement? The thesis has presented results and analysis which do not amount to an unqualified endorsement of the placement as being an efficient means of enhancing the learning and skills which retain still primacy of purpose in Higher Education. However placement is not primarily promoted on its academic merits, thus one would not suggest that the findings of the thesis (even if reinforced by further research) would be sufficient grounds for reducing the commitment of resources to this mode of increasing the vocationalisation of HE. But given that universities have as one of their goals, a mission to promote academic excellence, there is a need to

examine the learning mechanisms and cognitive processes involved in the placement and in its relationship to academic tasks, with a view to structuring the placement to optimise any potential academic benefits. There is a need also to subject to critical scrutiny the real value of that set of benefits commonly associated with the internship and for which there has been virtual unanimity within the literature, but for which there is still a paucity of published evidence. This is particularly the case since there is some evidence (primarily from the literature, but given some support by the findings of this work) that work experience undermines the undergraduate's faith in theory. Such a divergence between perceptions of practice and theory, if allowed to be perpetuated, can only undermine further student valuations of the central processes of higher education; which is nothing less than a calling into question the history, traditions, goals, and *raison d'être* of the university system of education in the countries of the United Kingdom. In this respect, as with so many others, there is the need for more research on how student perceptions of the relationship between the practical and the theoretical are influenced, as well as how their expectations are formed. The university role in regard to this should be to initiate more such research as a matter of urgency and to make the findings widely available to all stakeholders, and if necessary modify its approach to placement programmes. If the research findings are significantly at odds with what has been assumed in favour of internship programmes across the board, then perhaps a more radical outcome is necessary: no less than one which critically calls into question the whole movement towards vocationalisation within HE. Moreover, the evidence for a decline in the take-up rate for placement opportunities has potentially severe implications for the universities: in an HE environment in which the language of the marketplace is increasingly prevalent, in which undergraduates are designated as consumers, then if the consumer is truly king (and queen), and funding follows the consumer, then just as departments and faculties can be closed because there is insufficient consumer demand, then it would be an inconsistency to continue to promote and resource internship programmes where the consumer demand was falling below critical levels.

12.5.4 Policy and government. The thesis at the outset established that the recent history of internships within HE programmes has been bound up with government-driven initiatives and policy pronouncements within an overall policy thrust aimed at promoting increased

vocationalisation within the UK Higher Education system. The thesis has presented partial (and early) evidence not yet in the literature, that despite the resources being invested in increasing the opportunities for placements, undergraduates are less inclined to opt for these. This suggests that the government's (and the universities') message on the benefits of placement is not getting through or is not persuasive enough. If the latter, then government needs to initiate research to find out why this is the case, because it implies that the weight placed by undergraduates on the benefits of placement is less than that of the government (and the universities). Just as the universities will need to respond to falling demand for placement opportunities, so too ultimately will government: it would be logically inconsistent to allow universities to close departments and faculties because demand is falling below some critical threshold while encouraging resources to be channelled into internship programmes for which there was insufficient demand.

12.6 Limitations of The Study and Future Research Direction

As with any work of original research there are in-built limitations to the thesis. The researcher identifies four categories of limitations in the thesis:

- i. Methodological limitations.
- ii. Research base limitations.
- iii. The purity of architectural forms in practice.
- iv. New questions seeking answers.

12.6.1 *Methodological limitations: an alternative formulation of the research question(s)?*

Apart from the issues of research design considered in Chapter 9, there are other limitations of a practical-methodological nature which deserve to be highlighted. Conceived initially as a single research question - do two groups of undergraduates similar in most respects other than whether or not they experienced a singular condition (the placement), perform differently in academic tasks? - the methodology was driven by the identification of an appropriate test statistic for differences. Having selected the appropriate set of statistical tests and having applied these, one is presented with a set of results which answer the basic research question(s). However, in seeking explanations for the results, one is driven to learn more about the processes and phenomena investigated, and thus one becomes more aware of

the potential for other variables to act upon the key relationships being investigated. Given the exigencies of the editorial processes of disciplined writing in the construction of a thesis, one needs to decide what can be left out of the investigation. As researcher, the decision then becomes one of the degree of confidence one has in the weight one attaches to the various variables and relationships which inform the analysis, and in particular, those relating to the central hypotheses to be tested as well as the confidence one has in the chosen statistical techniques. Having taken that set of decisions, one nevertheless is led to consider if the central research question could have been formulated differently, and if so, how might an alternative formulation inform the methods to be used, and the inferences to be drawn? For example, as an alternative formulation of the research question(s) one might propose: *From a range of variables, among which are placement under different architectures, what is the best predictor of academic performance?* It is clear that the framing of the research task in this formulation would lead to the selection of a different statistical technique – namely, *multiple regression* – and at the same time would require wholly different sets of data: in addition to the information on placement/non-placement and assessment data, one might consider *gender, entry qualifications, age*, and perhaps other information of a socio-economic nature. It is impossible here to indicate if the outcome of such an approach would have led to a set of conclusions which were significantly different from that reported in the study; however one can admit that even if the conclusions were broadly similar in relation to the weight one can attach to placement in academic performance, one is left with a wider set of subsidiary propositions which one can draw from the results and from which one can construct further testable hypotheses. In other words, one is recognising that in choosing one particular formulation of the research question, and in choosing a set of statistical techniques which are appropriate to answering that question, one effectively circumscribes the range of conclusions which one can legitimately draw from the study. In the case of the thesis, it is to be admitted that the chosen research question formulation and the consequent methodology probably narrows the range of conclusions which might otherwise have been drawn had an alternative approach been taken. In recognising this limitation of the study one is still indicating how further research might proceed in the future, and in this recognition, one is further contributing to the field of research by preparing the methodological ground.

12.6.2 Research base limitation: field of study. By confining its field of investigation to a particular area of undergraduate studies (business programmes) within a particular university, the scope for generalising the results is of necessity circumscribed. For example, in the absence of other sources of evidence, one would have to use the cautionary principle when considering the lessons for non-business programmes with a significant placement element – say in bio-sciences, for example, where the emerging evidence (Duignan, Lush and Gomez, 2004) is that the transfer of learning effect is stronger than that found in the thesis. This limitation is compounded by the fact that the field of investigation is also restricted to the case of business placements at one particular university. Thus even when one is drawing inferences across business programmes and across different universities, one has to be aware that there may be other conditions which vary between institutions and which have not been factored into the study. This limitation leads one to conclude that for effective policy to be formulated in this area of HE activity, it will be necessary for a wide-ranging research programme which covers many institutions and many diverse courses of studies in which placement is integrated into the academic programme. Again, in recognising the limitation of the research base of the thesis, one is preparing the ground for further studies which will inform the extent to which the conclusions drawn from the thesis can be generalised to other programmes and other universities engaged in placement.

12.6.3 Research base limitation: type of placement. The study is concerned with placements (under both architectures) which are salaried and of one year duration. While this type of placement (formerly known as *thick sandwich*) has been central to the vocationalisation model of HE for almost half a century (alongside the *thin sandwich* version), it is playing a reduced role in the current drive towards vocationalisation. This is for two reasons: firstly the numbers of undergraduates choosing to take placements of one year is in decline (information generated by primary research for the thesis); secondly the expansion of vocationalisation has included an increase in the diversity of the types and duration of placement opportunities available to students in higher education in the UK. Increasingly (multiple) short periods of (unpaid) work experience are being offered to undergraduates, both within and outwith the formal teaching semesters. In which case, any conclusions which might be drawn about transfer of learning (or about motivation) from the thesis would not

necessarily apply to other forms of placement experiences. One would need to test for the specifics of different placements and their relationship to academic performance.

12.6.4 Research base limitation: lacuna in data sets between architectures. While the main data sets used for testing the central propositions of the thesis were comparable between the two sets of “paired” cohorts being examined under the different internship architectures, (archival, anonymised, identifiable as between placement/ non-placement, percentage module scores etc.), there were two elements of data which were applicable only to the learning environment intern cohort (and its non-intern peer group): the provision of results on an inter-semester basis, and the data mined from questionnaire returns. It was not possible to derive the data for the work environment cohort (and its non-internship peers) on an inter-semester basis; similarly it was not possible to administer a questionnaire to this same group as at the outset of the research the cohort had already graduated. This imposes a limitation on the study since it is precisely these two elements which provided the basis of the propositions which were derived on the potential role of motivation on performance in the post-placement period under learning environment architecture. One cannot say with any degree of certainty, that similar motivational forces were at work under the work environment internship. One would like to have evidence on this, as it would inform the debate on the role of placement (under any type of architecture) and its impact on motivation towards academic studies.

12.6.5 Placement architectures: an artificial dichotomy in practice? The thesis has defined and placed in the literature two distinctive forms of placement architectures which have been drawn from real examples. The distinction made between that of *work environment* placement and that of *learning environment* placement is not simply in terms of the logged differences in structural features (including management of the placement), but crucially in the intended (anticipated) outcomes of the placement. Even setting aside any question of learning transfer which might impact upon academic achievement, the deliberate reconfiguration of the architecture from that of a work environment placement to that of the learning environment model was intended to increase the probability that the benefits normally associated with the extended placement would be experienced by the intern. However, as has been referred to at several junctures in the text of the thesis, hosts operate

under dynamic conditions in which the exigencies of the marketplace and of service delivery may intervene, and as such may mean that there has to be a flexibility in the placement arrangements on the ground. In other words, whereas under the work environment placement the student should be prepared for changes in roles and expectations, under the learning environment while this may not be the case *ex ante*, it may have to be the case given unplanned (or unanticipated) changes in the host environment. In this respect the study is limited in that the degree to which the learning environment actuality might have diverged from that intended, has not been established: one can conceive of a situation in which some (or many) placement students find that the placement experience in practice diverges substantially from that expected and planned for. Thus instead of having a clear-cut distinction between the architectures, one should perhaps think in terms of a spectrum of placement experiences, some of which may fit the learning environment model, but others – though having been planned in a manner which fits the learning environment case – may be leaning towards the work environment model. In which case, one might argue, the nature of the benefits associated with the placement in these conditions are unlikely to differ significantly from those of the work environment internship. In highlighting this possibility, one is indicating that further research should look at the theory and practice of the learning environment placement.

12.6.6 *New questions seeking answers.* It is the nature of any intensive piece of research that new questions emerge from the investigative process, not all of which can be answered within the constraints of the thesis. However some unanswered questions which have emerged from the thesis deserve to be aired more than others because they may raise matters of fundamental importance to central assumptions upon which the research question has been posited. Two related sets of questions of this nature have been identified by the researcher: issues relating to *prior-selection*; and issues relating to the *value of differences in architecture*.

12.6.6.1 *Prior-selection issues.* It has been shown statistically that under both architectures of placement there has been prior-selection: those who elected to take an internship were stronger on average than those who chose not to do so. This raises an immediate question: what forces are at work such that academically stronger students opt for an internship? Since

the phenomenon of prior-selection is present under both architectures, it is reasonable to infer that it is not architecture which informs this process to any significant extent. Is there then a subtler process in the “selling” of the placement which makes it more attractive to the stronger undergraduate? This question of prior-selection is potentially important in an aspect related to one of the key findings of the thesis: if work placement does not lead to significant value-added in the academic domain, might it be because the students who could gain most from placement are not electing to do so? This unanswered question has implications for policy, and calls into doubt a central plank of the role of placement in the vocationalisation of HE: instead of assuming that the benefits of placement will be universal, universities should recognise that some students may benefit more than others from internships; an implication of which might be that they allocate resources to identifying the type of student who has most to gain from the internship, and upon this transparent basis, empirically underpinned, they promote the placement to these students. (If nothing else, such transparency is fairer to all students: those who are well-disposed towards the placement for whatever reason, and those who have doubts as to its worth).

12.6.6.2 The value of differences in architecture: beyond the academic. Assuming that the theory and the practice of the internship architectures do not diverge significantly, then the findings of the thesis which point to low transfer of learning from the workplace to the academic domain under both architectures, raises the possibility that transfer of learning is not a function of architecture. In which case the propositions regarding the role of motivation post-internship take on an added importance. At the same time there is another unanswered question relating to varying the architecture – unanswered because un-posed in the main text of the thesis – what is the value of the non-academic benefits of the placement and do these vary by architecture? Perhaps the real justification for the resource cost of the learning environment relative to that of the work environment internship, is that the former better delivers the broader portfolio of benefits for which the generality of claims for the advantages of the placement are posited upon. However, there is as yet no empirical evidence on this.

12.7 Conclusion: Tentative Propositions

There is no well-founded empirical basis for the preference of one type of placement model over the other whether it be couched in terms of architecture as this thesis has presented the issues, or in terms of the duration and frequency of the work placement which is integrated into the formal programme of studies (the difference between *thick* and *thin* sandwich provision), or indeed in terms of the merits of programmes such as STEP in which the work experience though structured is not formally integrated into the programme of academic studies. One of the reasons for this uncertainty, and exposed by the thesis is that there is a lack of critical understanding of transfer of learning among those who promote vocationalisation in general in HE, and placement in particular. Additionally, there seems to be a lack of clarity as to the expected learning outcomes of the placement experience – what is it that is being promoted with placement programmes within HE? Is it a set of transferable skills and competencies which are not readily produced within the academic domain of HE – and which anyway many academics believe are better left to companies or FE colleges – or is the internship meant also to add value to academic attributes, with *employability* being a joint product of this bastard system of producing knowledge and learning? Research is required to look into the relationship between the placement and academic performance in terms of learning efficiency. One way of imposing a coherent and logical structure on the theory and practice of placement within higher education will be to move towards giving full academic credit for placement as suggested above. Apart from imposing a discipline upon the student in the placement, and perhaps helping reverse the decline in the demand for internships, it would serve to impose a much needed discipline on the universities, on government advocates of vocationalisation, and on host organisations – all of whom approach placement from a different perspective of the benefits, and mostly in an unscientific way. It is proposed that:

- i. There is a misperceived difference in the learning processes, mechanisms, principles and experiences of the academic institution and those of the workplace, between which the intern undergraduate is expected to move and to learn.
- ii. There is a qualitative difference in the core values of these two domains – one is driven by the logic of the marketplace (or the provision of sets of social goods and services) while the other is still largely nested in principles of producing and

disseminating knowledge to which all can have access on democratic principles, rather than on the basis of being able to pay.

- iii. The universities cannot ignore the exigencies of the marketplace and the increasingly proprietary nature of information and knowledge, nor can they ignore the strictures and commands of their paymasters (be it the government or their commercial partners). To this end, they must learn to live with vocationalisation and to reconcile the conflicts highlighted in points i. and ii. above. However reconciling must not mean capitulating on core principles of teaching and learning and how the effectiveness of these are to be evaluated.
- iv. Fundamental differences between domains can be narrowed by the design and implementation of tri-partite learning contracts involving the undergraduate, the host in the form of a designated workplace tutor who is competent as a supervising tutor, and the university in the form of the placement tutor and / or academic tutor who is designated to supervise academic aspects of placement.
- v. Finally, the internship should be truly integrated into the academic programme by the creation of a WBL assignment which while being located in the workplace is designed as a critical teaching and learning device and one which can be assessed on traditional methods of academic due diligence, and which can demonstrate to the intern the extent to which the internship has led to a transfer of learning. Such assessment will give full academic credit for placement and will involve the host tutor(s) in the post-placement assessment and embedding process in the academic domain.

The principles of the vocationalisation of HE have been grafted on to the tradition of the sandwich degree programmes which had been designed to offer learning opportunities which were not conveniently produced in the lecture theatre. However over time the objectives of the placement within formal degree programmes have become confused. The reasons for this confusion can be placed at the feet of the expansion of the HE sector and the competition for students. Universities, traditional and new, have to compete in the marketplace for students and resources. As they strive to obtain more resources, they have to be acutely aware of the political economy of HE – effectively, with few, if any exceptions, they have to adopt the main themes set by central government. When central government decrees that widening

access and the provision of opportunities to undertake quality work experience as part of their programme of studies is a major basis of the provision of resources, and that *employability* of their graduates is the ultimate test of the effectiveness of their efforts, then the universities will have little option but to embark on that programme. Universities will perforce be increasingly aware of the need to differentiate their “product”, and to market their unique characteristics. One way in which some have attempted to do this is by promoting placement as a means of improving the academic attributes of their undergraduates. The evidence presented in this thesis has not been strongly supportive of this proposition. However, the analysis presented herein suggests that well designed placements have the potential to enhance academic qualities – especially if in preparation for the internship, undergraduates are familiarised with the concept and principles of transfer of learning. In such circumstances it might be possible to reconcile the demands of politicians, the values of the marketplace, the aspirations of students and the dreams of academics.

Part Four: Appendices, References / Bibliography

Note on the presentation of appendices:

The appendices presented come from a range of sources including material generated by field research, from conventional published sources such as academic journals and from web-based sources. In presenting this material an attempt has been made to establish a convention for consistency of purpose and for presentational reasons. This researcher has developed the following method:

- i. The initial presentation of each appendix will include an introduction which takes the form of *context within thesis*. This will provide some cross referencing between the appendix and a relevant chapter or chapters. It will also provide a brief argument in terms of how the appendix is held by the researcher to inform the thesis. After which the appendix will appear.
- ii. Font and style: in order to distinguish between the contribution of the candidate and material garnered from other sources and presented as an appendix, the former will be presented in the same font as the main body of the thesis (Times New Roman, 12.0). All other material which appears as an appendix and which is not attributable to the candidate as it is presented, will be presented in Arial, and usually in the font size as downloaded. This has been adopted because most of the web-sourced material which will be presented in appendix form, has been downloaded in that style. This has also been used in cases where a journal article forms the basis of the appendix, and where this has been accessed in electronic form.
- iii. Web-based sources and referencing. The usual convention is used here of citing the full URL and the date of accessing the material.
- iv. Use of endnotes. While it may not be usual to use footnotes or endnotes in appendices, these have been sparingly resorted to in this section.

Appendix 1 *Universities gain from work experience*

Context within thesis: universities make a range of claims for the benefits of work placement. Sometimes they include in these claims the assertions that it can benefit academic performance. Below are two extracts from university web pages which relate to this. One of the central thrusts of this thesis is that there is a lack of published, testable evidence for such claims. Note that in the context of the thesis, there are specific references to both motivation and enhanced academic performance in the examples below taken from two UK university web pages.

Example One:

(Source:<http://www.uwic.ac.uk/uwicnet/studserv/workplacement/whatdoestheuniversitygainfromworkexperience.htm> accessed July 14, 2004)

What does the university gain from work experience?

- **increases employability of students, contributes to league tables**
- **enriches curriculum, keeps it current. Visiting practitioners from industry can bring real life examples**
- **greater motivation by students in their final year**
- **improved performance by students as they apply skills learned in placement to later course material, e.g. project work etc**
- **marketing of university which in turn can attract more research and collaboration and improve recruitment**
- **industry stimulates new research areas**
- **more enhanced teaching as student return with more in-depth knowledge of the subject area**
- **can provide opportunities for staff placements in industry**
- **contributes significantly to a more desired student-centred approach to learning**

- can open up industry training opportunities for the university, e.g. of supervisors

Example Two:

(Source: <http://workexperience.ulst.ac.uk/staff/value.phtml> accessed 14 July 2004)

Why is work experience important?

Work experience has many benefits for students and employers, but here's some reason how it can benefit you and your course:

- It can be used as a selling point to attract more students to your course
- QAA assessments are increasingly looking for evidence of links to industry and work experience
- The Dearing Report recommended that all higher education courses contain some form of work experience
- Academic learning can be enhanced through practical experience

Appendix 2: National Centre for Work Experience (NCWE)

Context within thesis: Chapter 2, vocationalisation and orthodoxy on benefits. Also issues of employability. Reproduced below are various publications and other forms of communication issued from NCWE. These extracts give a flavour of the role of that organisation in the dissemination of information relating to work experience, to conducting research and producing guidance to the stakeholders in work placement on what constitutes good practice.



Welcome to the **National Council for Work Experience**
Promoting, supporting and developing quality work experience for the benefits of students, organisations and the economy

Codes of good practice

The following definitions have been developed in consultation with experienced practitioners

A definition of quality work experience:

Quality work experience is temporary employment if a student, usually off campus, within a framework of learning and assessment where the individual student takes control of the learning.

The following items represent criteria for good practice in experiential learning, based on the experience of practitioners and the contributions of the writers in the NCWE Placement Tutor's Handbook.

- The student is taught by the HEI to identify and recognise potential learning outcomes, including key skills development and subject related areas.
- Learning objectives are set (by the HEI, employer and student) within an agreed structure or framework i.e. a Learning Agreement or Learning Contract
- Supervision is by an employer supervisor who understands the objectives, benefits and learning outcomes of work experience
- Academic supervision and visits take place at an agreed frequency
- Regular feedback is given
- An appraisal is given during and at the end of the work experience by the employer supervisor
- A project undertaken, and a report is written
- Learning, development and achievements are articulated by the student in written form
- A presentation is given of results, achievements and personal development
- Guidance is provided to integrate this learning into longer term career planning
- An assessment is made of skills development (by HEI, employer and student)
- The student integrates the learning into a career management plan
- Recognition, credit or a certificate is awarded

Employers need therefore to know what constitutes good practice on their side:

- Relevant legislation is adhered to e.g. health and safety at work, employers liability insurance and equal opportunities legislation
- Students who contribute to the profitability or objectives of the organisation are paid a proper wage for their work; sandwich students who work for a year are paid a proper wage (if possible) for their work
- A job description is given which matches the original description or advertisement for the job
- Where appropriate, a contract of employment is issued
- The job lasts for the agreed length of time except in exceptional circumstances
- Induction is given into the company and the job
- Learning objectives are set (in conjunction with the student) within an agreed framework i.e. a Learning Contract is agreed
- Opportunities for key skills development are given whenever appropriate
- A project is identified in conjunction with the student and HEI

- Supervision is given by an employer supervisor who understands the objectives, benefits and learning outcomes of the work experience
- Opportunities for training are given where appropriate
- Regular feedback is given
- An appraisal is given during and at the end of the placement by the employer supervisor
- An assessment is made of achievements and key skills development, with guidance, where necessary from the HEI
- Access to a visit in the workplace by the HEI is made possible
- A return visit to the HEI during the placements is facilitated where possible

For some courses Sandwich placements will not be appropriate or possible. In these circumstances work experience may, for example, take the form of vacation or part-time term-time work which is not part of the course and is not supervised by the HEI. Where this happens, the quality of the experience and the learning derived from it is paramount. However, the Secretary of State for Education and Employment has stated that all students should have a minimum period of work experience.

It is difficult to be prescriptive about the minimum length of time this should be since the quality of the work experience is not determined by time scales but by the learning achievements and skills development. However, it is unlikely that it will be less than 2 months full-time for project focused work, or 3 months full-time, or 1 year part-time of 8 hours a week, or a combination of these, where:

- Objectives are set
- Feedback is given
- An appraisal is undertaken
- Learning and achievements are articulated by the student in written form
- An assessment is made and recorded of skills development (by the student) preferably with employer endorsement
- The student integrates the learning into a career management plan

For academics

What is work experience?

We surveyed practitioners on definitions for a glossary of terminology of commonly used words in the field of work experience.

Quality Work Experience:

Quality work experience is temporary student employment within a framework of learning objectives and assessment where the individual student takes control of the learning.

The experience could take the form of short term, long term (eg one year) or part time employment, and could be paid or unpaid.

The following items represent a comprehensive definition of quality work experience:

- the student is trained by the higher education institution (HEI) to identify potential learning outcomes
- objectives are set (by HEI, employer and student)
- supervision is by a supervisor trained in the objectives and learning outcomes of work experience - academic supervision and visit/s take place
- regular feedback is given
- an appraisal is given during the work experience and at the end
- where appropriate, a project is undertaken
- learning and achievements are articulated by the student in written form
- an assessment is made, including an assessment of development of skills (by HEI, employer and student)
- recognition, credit or a certificate is awarded

This ideal will not be possible for all undergraduate work experience, for example in part time term time bar work. The minimum that could be included within the title of "quality" will include:

- objectives are set (by the student)
- feedback is given
- appraisal is undertaken at the end of the experience
- learning and achievements are articulated by the student in written form
- an assessment is made of skills development (by student) with employer endorsement

For students:

What have you got to gain?

What will you get out of it? When you go for a job interview, employers will want to know what work experience you have had and what you learnt from it.

What's your answer?

With more graduates in the market, even a good degree is no guarantee of a good job.

Work experience can help you:

- improve your employability
- earn some cash
- stand out from the crowd

It's not just about 'proving' you can do the job. Work experience offers learning opportunities for:

- your course
- your self-knowledge
- your career planning
- the development of Transferable Key Skills

These are the non-subject specific life skills essential in the world of work and also the world at large. You can develop these skills as part of your academic study as well as through work.

So, what are these skills?

Employers want graduates who can:

- Show interpersonal skills
- Communicate well
- Research and analyse information
- Identify and solve problems
- Make decisions and initiate action
- Lead and motivate teams
- Be IT literate
- Be self managers and self learners

They will look for evidence that you have these skills.

Graduate employers say:

"Starting work is difficult and someone who has already had that experience is a great deal more attractive to us." Partner, KPMG

"Those students who have taken the opportunity of gaining work experience are likely to have demonstrated some of the skills we are looking for." Senior Manager, Marks & Spencer

Employers from 5 European nations listed work experience in their top ten desirable graduate attributes.

What counts as work experience?

Any paid or unpaid work that you undertake can count as valuable work experience IF you can learn HOW to articulate the skills you are developing by doing it!

For example:

- Sandwich courses
- Professional experience
- Course related placement
- Paid or voluntary vacation work
- Seasonal or casual work
- Structured vacation programmes i.e. STEP
- Student development activities e.g. mentoring, tutoring
- Work shadowing
- Overseas travel and gap year work

So, why would employers want to give you work experience?

Your work experience could be very valuable to an employer. You can bring:

- New insights and original ideas
 - The ability to tackle problems and tasks that otherwise might not get done
 - Involvement in interesting and complex problems as well as casual work.
- Most interestingly for you, employers can evaluate you as a possible recruit and pay you at the same time.

Most interestingly for you, employers can evaluate you as a possible recruit and pay you at the same time.

Next Steps

Think about the skills you have.

Re-read the list above.

See what work experience would best fit in with your studies and be most suited to your needs.

If you are working, write a list of the tasks your job involves, the skills you could develop and what you are learning about how an organisation operates.

Share these ideas with your tutor and careers advisor, and seek support from your employer to help you develop your skills.

Think how your experience helps your career planning, what you're going to put on your CV and tell a future employer at that interview.

Making the link between the work you do and skills you develop is a key factor in getting a good job.

Look out for the magazine Focus on Work Experience available from your careers service or student union. This will give you more information, ideas, case studies and contacts.

Who to Contact

If you need help in getting work experience, visit your university or college careers service for information about vacancies locally, nationally or overseas.

For part-time work, contact your campus Employment Service or Job Shop if there is one.

Your Student Union can also help.

Look at our Opportunities & Links page for useful websites and contacts.

Get Moving...Get Working...Get Ahead!

Source: http://www.prospects.ac.uk/cms/ShowPage/Home_page/Codes_of_good_practice, accessed 28 Oct. 02

SURVEY ON WORK EXPERIENCE

SYNOPSIS

BACKGROUND

A questionnaire examining graduate employers' attitudes and practices regarding work experience was sent out to 800 employers during May 2003. The questionnaire forms the preliminary research of a much wider research project which aims to help the Government and industry benchmark work experience practice. Of the 800 questionnaires distributed, 101 were returned by the closing date giving a response rate of 12.5%.

TPOLOGY OF RESPONDENTS

The largest number of respondents were from large private sector companies (56%) followed by small or medium sized private sector employers (19%), charity/voluntary organisations (16%), public sector organisations (10%) and the not for profit industry (2%). Regarding industry sectors, the largest proportion of respondents were from the real estate, renting and business activities sector (24%) followed by the manufacturing industry (20%), the other community, social & personal sector (13%), the wholesale, retail & motor trade (11%) and the construction, mining & quarrying industry (7%).

The majority of respondents (97%) offered work experience placements, 2% did not offer placements and 1% used to but do not any longer.

WHY EMPLOYERS RECRUIT WORK PLACEMENT STUDENTS

The main reason why employers take on work experience placement students is to find **suitable permanent staff (62%)**. One employer noted that they see work experience as a way to source quality graduates ahead of the milkround. **The majority of employers (73%) have recruited students on a permanent basis as a result of work experience placements.** Of these employers, the largest proportion (20%) recruit 11-20% of work experience placement students on a permanent basis. **One employer noted that 'at least two students in the last three years have been promoted into senior positions within the company.'**

Placement students are also taken on as a gesture to the community/local student population (46%), to undertake a specific project (39%), to cover busy periods (19%) and to meet an immediate need (17%). A small number of employers also take on work placement students to promote the industry sector as a career (5%) and to promote awareness of their companies' opportunities (2%).

NUMBER OF WORK EXPERIENCE PLACEMENTS OFFERED

Just over one fifth (21%) of employers offer three to five placements on average per year and the same proportion (21%) offer in excess of 30 work placements. Of those employers who offered in excess of 30 placements, 20% offered 60 to 65 work placements, 10% offered 30 to 40 work placements and 10% offered 90 work placements.

One pattern that emerges is that the larger the company the more likely it is to offer in excess of 30 work experience placements each year. Over one quarter (28%) of large private sector companies offered in excess of 30 placements compared to 11% of small and

medium sized private sector employers. Of charity/voluntary organisations 25% offered in excess of 30 placements and for public sector organisations this figure was 10%.

TYPE OF WORK EXPERIENCE PLACEMENTS OFFERED

Sandwich placements were the most popular type of work placement offered by employers (63%), followed by vacation work (53%), work-based projects (18%), voluntary work (18%) and 'other' (17%). Where employers specified 'other' for the type of work placement offered this included school work experience placements for 15-16 year olds, gap year placements and funded projects, e.g. the Leonardo Project.

AVERAGE LENGTH OF WORK EXPERIENCE PLACEMENTS

Most employers offered work experience placements of less than six months (49%). Of these employers, the largest proportion (27%) provided placements which lasted two weeks. Employers also offered placements of 12 months (28%) and of between six and 11 months in length (18%). Only a small minority (2%) offered placements of more than 12 months.

STARTING DATES FOR WORK EXPERIENCE PLACEMENTS

Most work experience placements start between May and August (noted by 65% of employers), followed by September to December (17%), all year round (10%) and January to April (4%).

SALARIES OFFERED TO WORK EXPERIENCE PLACEMENT STUDENTS

Almost three quarters of employers (74%) offer salaries to work experience placement students. Just over half of all respondents (51%) offer a salary of between £10,000 and 14,999 whilst just less than one fifth offer salaries of less than £10,000 (18%). Only a small minority of employers offer salaries within the range of £15,000 to 19,999 (4%). One employer noted that pay can be performance related, whilst another employer said that they offer a car in addition to a salary of between £10,000 and 14,999.

TRAINING AND ACCREDITATION

Most employers provide induction training on the company (94%) and induction training on the job (95%). They also provide job related training as required (95%), project work (76%) and mentoring (73%). However, only 26% of employers offer students an award of a credit or certificate.

SKILLS AND QUALITIES IMPORTANT TO EMPLOYERS WHEN RECRUITING WORK PLACEMENT STUDENTS

Students' oral and written communication skills are the most important attributes when employers are recruiting work placement students, with 67% of respondents stating this. Following this, the top five factors when recruiting work placement students are degree subject (63%), degree class (48%), other work experience gained (46%), technical skills/foreign language skills (44%) and A levels/UCAS points (43%). Additional qualities that employers look for include a knowledge and interest in the company, a genuine desire to work in the industry, a good understanding of the demands of the job, a long term interest in the post and any extracurricular interests and achievements.

July 2003

From: Christine Shone <C.Shone@prospects.ac.uk>

To:

Date: Monday - September 15, 2003 11:02 AM

Subject: Latest Issue of NCWE E-Letter

THE VALUE OF WORK EXPERIENCE

The case for work experience has been boosted over the summer months by a number of reports and surveys that continue to show the importance of it in preparing young people for the world of work.

The first called 'Higher Education: Higher Ambitions? Graduate Employability in Scotland' from Critical Thinking, policyworks and the Scottish Council Foundation, (www.criticalthinking.co.uk) in a section on the Benefits of Work Experience states:

"There is very strong evidence that practical work experience is key to early and appropriate employment for graduates"

"Young people, employability and the induction process" from the Joseph Rowntree Foundation, (pdf available at www.jrf.org.uk) also states:

"Almost without exception, employers felt that young people who had undergone a period of work experience were better equipped than others for the world of work".

And in its Interim Report, the Lambert Review states:

6.6 Work experience was universally regarded as an important way of developing employability skills and business awareness. One respondent noticed, "A step change in the awareness of graduates with previous work experience to the political sensitivities of the workplace, and a greater willingness to take responsibility for their own development." However, concerns were expressed about the variability in the quality of work experience and the value of more mundane work, with some suggesting a need for some form of accreditation.

In view of all of this, NCWE believes it is now time to set standards for all forms of work experience to ensure that both employers and students get the maximum benefit from the opportunity that has been offered. We are currently working on a number of ideas with employers to develop a set of standards and further details will be available later in the autumn.

In the meantime, NCWE would like to issue a challenge: can anyone come up with a short, snappy phrase that would replace the words 'work experience'? Alternatively, should we try and encourage those two words to be used only in the context of students at college and university and come up with a new phrase for the week or two that is undertaken by those at school to differentiate more clearly between the two? A bottle of champagne to

anyone who can coin something appropriate!

Finally, NCWE has also undertaken a short piece of research amongst employers, examining their attitudes and practices. A synopsis of the results is attached.

<<NCWE Research - Synopsis Report 1.doc>>

Christine Shone
 Work Experience Projects Assistant
 Graduate Prospects/NCWE
 Prospects House
 Booth Street East
 Manchester
 M13 9EP
 Direct Line: 0161 277 5345
 Switchboard: 0161 277 5200
 Fax: 0161 277 5220
 c.shone@prospects.ac.uk
www.prospects.ac.uk
 Graduate Prospects is the new name for CSU Ltd

Appendix 3: World Association for Cooperative Education (WACE)

(source <http://www.waceinc.org> accessed 14 July 2004)

Context within thesis: referred to in Chapter 2 of thesis in the context of the internationalisation of the movement towards the promotion of work-integrated learning throughout the global higher education systems. To be seen in relation to UK developments such as the National Centre for Work Experience (NCWE) and the Association for Sandwich Education and Training (ASET). It should be noted that in relation to the language of the thesis, the terms *placement*, *internship*, *work-based learning* and *work integrated learning* can be used interchangeably. The term *cooperative education* is not used in the main body of the thesis.

What is the World Association for Cooperative Education?

The World Association for Cooperative Education is an international nonprofit organization dedicated to helping interested individuals and institutions forge close ties between the classroom and the workplace. It actively advocates cooperative education (also known as work-integrated learning or co-op) around the world. It also provides technical information and assistance to schools, businesses, and governments that want to establish or strengthen cooperative education programs.

WACE was founded in 1983 by a group of university and college presidents, educational specialists, and employers from Australia, Canada, Hong Kong, the Netherlands, the Philippines, the United Kingdom, and the United States. It is the only organization devoted to promoting co-op internationally.

WACE Objectives

The World Association for Cooperative Education strives to:

promote work-integrated learning around the world.

advocate and advance work-integrated learning as an international human resource development strategy.

build global alliances of education, industry, and government.

provide value-added services, information, and products.

sponsor regional forums and a biennial world conference for association members

A Brief History of Our Organization

The World Association for Cooperative Education, Inc. (WACE), formerly known as the World Council and Assembly on Cooperative Education, was founded in 1983 to foster cooperative education and other similar work-integrated education programs worldwide . Its founders were college and university presidents, educational

specialists and employers from Australia, Canada, Hong Kong, the Netherlands, the Philippines, the United States and the United Kingdom.

As the only organization devoted to cooperative education on a global basis, WACE seeks to be an aggressive advocate of work-integrated education and a resource of information and assistance to schools, employers and governments endeavoring to initiate or strengthen programs.

At its inception the World Assembly for Cooperative Education identified three objectives. First, membership growth was to be initiated by inviting educators and employers from around the world to join the World Assembly. Next, biennial world conferences on cooperative education would be sponsored. Third, a newsletter with world-wide distribution, was to be published and, in 1987, the first edition of Global Newslink was issued. Northeastern University in Boston continues to publish two editions of this newsletter per year.

Over the next few years, the World Assembly established itself as a viable, albeit small, international association capable of sponsoring successful international conferences. Biennial world conferences have been held in London, England (1979); Boston, United States of America (1981); Melbourne, Australia (1983); Edinburgh, Scotland (1985); Amsterdam, the Netherlands (1987); Hamilton, Ontario, Canada (1989); Hong Kong (1991); Dublin, Ireland (1993); Kingston, Jamaica (1995); Cape Town, South Africa (1997) and the 11th World Conference was held in Washington, D.C., United States of America (1999). Planned meetings of the World Council and regional conferences for the future are scheduled in Nagoya, Japan(2000); and Bandung, Indonesia(2002); World Conferences will be held in Narhon Ratchasima, Thailand(2001) and Rotterdam, The Netherlands(2003).

Based on these achievements and the growing interest in a broader linkage between education and work experience, the World Assembly expanded its objectives to include increasing worldwide membership; actively promoting the values that accrue to all participants in cooperative education; assisting employers, especially multinational corporations, to take full advantage of the potential values of cooperative education arrangements with educational institutions, especially as they pertain to human resource development; and providing technical assistance to educational institutions and governments interested in adopting some form of cooperative education, particularly among Third World Countries.

(Contact information):

Peter Franks
 Chief Executive Officer
 World Association for Cooperative Education, Inc.
 International Secretariat

360 Huntington Avenue, Suite 384 CP
Boston, MA 02115-5096
U.S.A.
Telephone: (617) 373-8885

Ms. Irene Arsenault
Administrative Assistant
World Association for Cooperative Education, Inc.
360 Huntington Avenue Suite 384 CP
Boston, MA 02115-5096
U.S.A.
Telephone: (617) 373-8885
Fax: (617) 373-3463
E-Mail: i.arsenault@neu.edu

<http://www.waceinc.org/contact.shtml> accessed 14 July 2004

Appendix 4: *STEP*
(Source <http://www.step.org.uk/> accessed 14 Jul. 04)

Context within thesis: Chapter 1, the scope and forms of work placement are many and varied in their relationship to the formal programmed of studies undertaken by the

undergraduate. In general work experience such as that offered under Shell's STEP programme are external to the undergraduate's programme of studies.

STEP (the Shell Technology Enterprise Programme) places undergraduates into small and medium sized companies and community organisations to undertake a specific business or technical projects (sic) driven by the needs of the host business, enabling them to develop their business through the recruitment of bright, intelligent and talented individuals.

The programme has the dual aim of communicating to small business managers the huge impact an undergraduate can have on their business whilst encouraging undergraduates to consider starting a career within the vibrant small business sector. Over the past 18 years, STEP has delivered in excess of 20,000 projects within small businesses throughout the UK.

Extracted from <http://www.step.org.uk/> (accessed 14 Jul. 04)

Appendix 5 CVCP calls on employers to boost work experience

(Source <http://www.universitiesuk.ac.uk/mediareleases/show.asp> accessed 15 April 2004)

Context within thesis: Chapter 1 (and various throughout). The Committee of Vice-

Chancellors and Principals of UK Universities (CVCP) is now known as *Universities UK*. It

mutual consultation between vice chancellors and principles of

K. As such it attempts to influence government policies affecting higher coordinating responses to government policy initiatives on higher text of the thesis, CVCP is cited as accepting in principle the higher education and the expansion of work placement opportunities for argued in the thesis that this has been largely an uncritical acceptance of in this respect, ignoring the lack of an evidence base especially in e effects of placement on academic performance. Additionally, its call e available increased numbers of placement opportunities coincides ce that the numbers of undergraduates seeking placement as part of studies is declining (Busby, 2003).

oyers to boost work experience

oyers to offer thousands more work experience opportunities to students at a ondon.

ility for Graduates' conference is being hosted by the Committee of Vice- ls of UK Universities at its Woburn House HQ in Tavistock Square, on rew Smith, Minister for Employment, Welfare to Work and Equal epartment of Education and Employment (DfEE) will be giving a keynote

latest stage in the CVCP's focus on employability skills for graduates and Skills Development in Higher Education" produced by PriceWaterhouse P and funded by the DfEE. Diana Warwick, Chief Executive of CVCP, will ill set out a new challenge to employers to join with universities in a ase work experience opportunities for students.

f the National Centre for Work Experience (NCWE) is to be warmly are around 50,000 course-related work placements available to students et the nation's employers, big and small, a New Year challenge. We want e can double the number of quality work experience opportunities nerate another 50,000 opportunities for the next in-take of m during their studies.

with the National Centre for Work Experience to co-ordinate future on this collaborative challenge."

or Graduates' event is one of an on-going series of Higher Education CP. Other speakers at Monday's conference will include:

r, Vice-Chancellor of Leeds Metropolitan University
The Council for Industry and Higher Education (CIHE)

- Karen Powell-Williams, Managing Director, National Centre for Work Experience

For more information

Email Press Unit

Tel +44 (0)20 7419 5568

<http://www.universitiesuk.ac.uk/mediareleases/show.asp?MR=87>

(accessed 15 April 2004)

Appendix 6: Foundation degrees – ministerial announcement

Context within thesis: Chapter 2 and vocationalisation of higher education. To be seen in the broader political context of the Labour government's goal of expanding access to higher education, and in particular their objective that 50% of people benefit from higher education by the age of 30. This thesis does not offer any critical comment on the educational

philosophy which might underpin such a political goal. Again the exhortation for the expansion of placement opportunities should be considered in the context of emerging evidence that undergraduates seeking placement are in decline. (Busby 2003)

15 February 2000

EDUCATION STATEMENT: RADICAL CHANGES WILL PREPARE HIGHER EDUCATION FOR THE 21ST CENTURY - BLUNKETT

Education and Employment Secretary David Blunkett today urged universities and colleges to prepare themselves for the 21st Century and to meet the challenges of globalisation and the knowledge economy.

Mr Blunkett announced the launch of a major new project to harness new technology to high quality teaching and learning, both in the UK and overseas, and the introduction of the Foundation Degree as a new vocationally-focused route into higher education. Currently, more than one in three students who gain two or more A-levels or the vocational equivalent do not go directly into higher education. In the landmark speech, Mr Blunkett outlined how universities must adapt and change to stay ahead in the global market; how greater diversification would be secured in the sector with excellence for an expanded student population; and how the role of higher education in sustaining economic competitiveness and social justice would be developed.

Speaking at the University of Greenwich, Mr Blunkett said:

"The arrival of the knowledge economy has intensified the competitive pressures on higher education institutions. Learning has become a big business. So a new national initiative is needed to maximise Britain's chances of success in this global environment. I can announce that the Higher Education Funding Council for England will bring forward proposals for a new collaborative virtual venture - a consortium of 'e-universities'. We want to create a new partnership between universities and the private sector which will develop a novel means of distance learning and exploit the new information and communication technologies. It will concentrate resources from a number of partners on a scale which can compete with leading US providers.

"If we are to become a leading knowledge based economy we must create new routes into higher education and new forms of provision. Our historic skills deficit lies in people with intermediate skills - including highly-qualified technicians. We have to develop new higher education opportunities at this level, orientated strongly to the employability skills, specialist knowledge and broad understanding needed in the new economy. We therefore intend to create new two-year Foundation Degrees to help meet our objective that half of all young people benefit from higher education by the age of 30. Last year some 80,000 students with two or more A Levels, or the vocational equivalent, did not enter

higher education directly. That's more than one in three of those who gained qualifications at this standard.

"The Foundation Degree will offer a new vocationally-focused route into higher education. It will be academically rigorous and will provide an accessible and flexible building block for lifelong learning and future career success, drawing together further and higher education and the world of work. It will be designed to be highly valued in the labour market and appeal to a wide range of students, including the most able. I envisage courses being offered in areas from IT and finance to the creative industries. For students wishing to continue their learning, there will be the opportunity to progress to an honours degree with only one-and-a-third extra years of study.

Mr Blunkett also called on higher education to forge new international alliances in order to secure excellence and diversity for an expanded student population. He said:

"Just as production and trade have restructured, so too can higher education use global alliances to share resources, facilitate staff and student mobility, and use new technology to spread excellence. That way we can expand access to new opportunities and enhance quality, rather than try and go it alone in low-level competition."

Mr Blunkett said that there was a special responsibility on higher education institutions to forge links with businesses. Liaison with small and medium-sized enterprises was particularly critical, since these companies are drivers of innovation and employment growth.

"Universities are autonomous institutions, and rightly so. But as the Prime Minister put it in his Romanes lecture last year, in the knowledge economy, entrepreneurial universities will be as important as entrepreneurial businesses, the one fostering the other. The 'do nothing' universities will not survive - and it will not be the job of government to bail them out. Universities need to adapt rapidly to the top-down influences of globalisation and the new technologies, as well as the bottom-up imperatives of serving the local labour market, innovating with local companies, and providing professional development courses that stimulate economic and intellectual growth."

Mr Blunkett also announced that he expected to see careers guidance in higher education improved, and expanded links with employment, including work experience and work placements on a similar scale to those in North America. Students were now more critical consumers of higher education, Mr Blunkett said, and they would demand better guidance on choices, and better development of their creativity, skills and enterprise for effective participation in the workplace.

NOTES TO EDITORS

1. Mr Blunkett was speaking at Greenwich, which now includes the former Woolwich Polytechnic, where Tony Crosland mapped the future of the polytechnics in 1966.
2. The 'e-universities' is the working title for a consortium - to be appointed after a competition - which will bring together universities and companies drawn from relevant sectors. The objective of the consortium will be to adapt and develop the new information and communication technologies to new

ways of teaching and learning, including flexible distance learning, so that British universities are well placed to compete in the growing global market for higher education.

3. In September 1999, the Prime Minister set a target for one out of every two young people being able to enter higher education by the time that they are 30 years of age.

4. Today David Blunkett launched a consultation exercise on the Government's proposals for the introduction of Foundation Degrees. A Design Group will take forward the development of Foundation Degrees. It will be chaired by Professor Ivor Crewe, Vice-Chancellor of the University of Essex.

Responses to the consultation document should be sent to Cate Dixon, Department for Education and Employment, Room N4, Sheffield S1 4PQ by 25 April, 2000. Media copies of the consultation document can be obtained from Kate Ormrod.

PRESS ENQUIRIES: Kate Ormrod 0171 925 5373

kate.ormrod@dfee.gov.uk

Jim Campbell 0171 925 5361

jim.campbell@dfee.gov.uk

OUT OF HOURS MEDIA CALLS: 01459 105993

PUBLIC ENQUIRIES: 0171 925 5555

info@dfee.gov.uk

Appendix 7 ASET

(Source <http://www.asetonline.org/> accessed 14 July 2004)

Context within thesis: Chapter 2 and moves to codify best practice in the area of sandwich education in general and placement arrangements in particular. The organisation produces a *Code of Good Practice for Sandwich Placements*, and is involved in a range of initiatives

(sometimes with NCWE) aimed at disseminating guidelines on work-based learning practices, including conference organisation.

ASET, founded in 1982, is the UK National Professional body for work based learning practitioners. The mission statement of ASET is:

"To promote and to support the concept of higher and further education programmes that integrate periods of academic study with periods of relevant work in an external organisation."

The integration of work and learning and the development, promotion, and implementation of best practice in this area is the primary focus of ASET. Membership gives Universities, Further Education Colleges, and Employers the opportunity to benefit from and contribute to a wealth of expertise and advice.

Appendix 8: Example of a WBL undergraduate programme

Context within thesis: Chapter 4 and some issues in defining WBL. The extract below is from <http://www.sems.surrey.ac.uk/SoM/WBL/BScPD.asp> (accessed 14 Jul. 04)

BSc Professional Development through Work Based Learning Part-time modular programme

This course is designed for those currently working in business, professional, public and voluntary organisations who are looking to gain formal qualification. Study is part-time and you can opt for Certificate, Diploma or BSc with Honours.

Features of the degree include:

- No formal entry requirements.
- No formal examinations. Assessment is through work-based projects.
- Academic credit given for prior learning that you may have achieved through certificated courses or learning from work.
- Individualised programmes of study that you negotiate with your employer and University tutor.

Introduction: All Credit To You

- New ways of recognising your job-based learning
- Getting support from your employer for academic qualifications

People learn most of their work skills through doing the job. Formally recognising this through university-accredited qualifications brings rewards - development for your own work practice and a stepping-stone to an academic qualification. It also puts you in a better position for being considered for promotion at your job.

The BSc Professional Development through Work Based Learning at UniS is one of the few first degrees in the UK that can be gained by using what you have learned from your work.

The 'subject' of the degree is the professional knowledge and skills that you have acquired for working successfully - communication and teamwork, for example. This is coupled with an understanding of yourself, your competence, and your personal development at work. The degree's work based learning courses translate the everyday experience of your work into assessable projects. It means that your work performance is recognised and enhanced by your updated understanding, through the course modules.

The work based learning qualifications:

Modules can be studied to a variety of levels up to an honours degree. You decide which best meets your needs.

Foundation Certificate (Level 1)
 Certificate of Higher Education (Level 1)
 Foundation Diploma (Level 2)
 Diploma of Higher Education (Level 2)
 Ordinary Degree (Level 3)
 Honours Degree (Level 3)

Modules

The University of Surrey has a range of modules which respond to your work-related needs and which lead to the degree. The WBL modules will help you gain credit towards a variety of qualifications at different levels. This means that you can step into academic study at a level which is right for you, and you can pace yourself in terms of the time you have available to study and work at the same time. Credits are awarded for each module you complete, and they can be accumulated towards the University's awards.

The modules:

Level one modules are listed below, please click the appropriate link to view modules at other levels.

<u>Level 2</u>	<u>Level 3</u>
--------------------------------	--------------------------------

Please click on the module titles for further information.

Handling Difficult People and Situations

In work and elsewhere we often have to 'deal with' people who seem difficult - demanding line managers, irritating customers or argumentative colleagues, for example. Sometimes the difficulties lead us to make habitual responses, despite our best efforts. We might not be able to prevent difficult situations but we can change our reactions, and behaviour towards the other person. In this module you will be introduced to assertiveness, and transactional analysis, to understand your own response and so identify positive outcomes.
Credits: 10

Introduction to Effective Teamworking

Teamworking is an established way to combine the skills, abilities and perspectives of a range of people. Getting the best from a team can be enhanced if members are helped to be aware of their roles, behaviour and responsibility to the team. This module introduces theories about groups, their formation and maintenance, and encourages observation and self-analysis with a view to developing skills and understanding. It is ideal for someone about to become a member of a new team, or for those who want to work more effectively in their existing team.
Credits: 10

Introduction to Interpersonal Skills

Getting to know yourself and how you communicate with others is a powerful tool for understanding your interaction with colleagues and customers. This module will introduce aspects of self-perception such as non-verbal behaviour, group dynamics, active listening and the 'art of conversation'. It is aimed at people wanting to reflect on their interpersonal behaviour, improving their skills at work and in social situations. It is an ideal course to start developing strengths for team working and handling difficult situations.
Credits: 10

Introduction to Management Accounting

The important information provided by accounting helps in economic decision making for all organisations - corporate and voluntary. You do not need to be an accountant to take this module which introduces you to the theory and practice of management accounting and is designed to help you make those important economic decisions. The module has practical examples to help you focus on accounting concepts and techniques, information and decision making in accounting, outline planning and control techniques, capital budgeting and annual reports.
Credits: 20

Introduction to Marketing

The success of an organisation in today's economic environment can depend on the effectiveness of its marketing strategy. This module is based on the premise that individuals from all levels within an organisation should be aware of basic marketing principles. It introduces you to the nature and function of marketing, the marketing cycle, how to identify target groups and analysis of business opportunities.
Credits: 10

Introduction to Recruitment, Interviewing, Selection & Retention of staff

Hiring the right person for the job can save many times their annual salary by preventing wasted recruitment and training costs. This module offers a framework for managing recruitment to improve the quality of candidate selection, whether your organisation is a business or voluntary concern. You will be introduced to the principles of staff planning, recruitment methods, selection methods, conducting the interview, and making the appointment.
Credits: 10

Introduction to Situational Leadership

A key to effective management is leadership - being able to get the job done by working with others, and at the

same time ensuring continuing co-operation. This module helps you understand leadership through analysing yourself, others and your organisation. You will be introduced to theories of motivation, the impact of the organisational culture and how to influence behaviour.

Credits: 10

Learning from Experience (Level 1 & 2)

This module is the main vehicle for claiming credit for previous learning. This achieved either by:

- Gathering together previous qualifications and seeing how they match the requirements of the work based learning awards (APL), and/or
- Identifying what experiential learning you have gained through work, and giving HE credit for it (APEL).

During the course you will be taught to recognise and reflect on your previous learning experiences, and to bring them together in a portfolio of evidence of learning. You could claim, and be exempt from, up to 2/3rds of the Work Based Learning programme; substantially reducing the time needed to achieve the degree.

Credits: 20

New Directions

Our personal and professional goals are often guided towards a narrow path at an early age, and can be influenced by what our family and teachers feel are our strengths. Later in life we can be led to redirect our life and work, and to take on further study. This module will help you take stock, reflect on your learning and work goals, and plan how to go further with work-related and academic learning. It offers an experience of active learning using imaginative techniques to rediscover strengths and create future options. The module is usually compulsory for people who want to 'fast track' into the final level of the Work Based Learning degree using APL/APEL.

Credits: 10

Personal and Professional Communication Skills

For those who wish to enhance their performance with clients and colleagues, this module develops the theory and practice of communication in personal and professional situations. The contexts can range from telephone and other verbal forms to written formats such as reports, letters, etc., and how to plan business meetings. Considerations about potential audiences, such as national and international markets are included. It is an ideal progression from the Introduction to Interpersonal Skills module as the course widens the scope of communication for an organisation.

Credits: 10

Presentation Skills

A short and practical course about how to make clear and appropriate presentations to different audiences. This will include self-presentation and use of language as well as choice of presentation formats, the usual aids, question-and-answer sessions and electronic presentation media. To achieve credit for this module, you will be asked to make a real presentation from a work-related context.

Credits: 10

Start Your Own Business

TBA

Credits: 30

Study Skills: Returning to Learning

As a mature student you might be highly motivated yet apprehensive about meeting the demands of learning at higher education level, including starting a degree course. The module covers time management for studying, how to use information sources and how to take part in discussions. Reading, note-taking, essay and report-writing are covered, including everyday issues such as grammar, structure, and academic referencing. This short, practical course, is useful for people who want to update their skills as well as for 'absolute beginners'.

Credits: 10

Virtual Office: Computer Skills

This module is designed for individuals who wish to know more about the potential of Information Technology in the presentation of information. This module will introduce you to programmes such as Word, Excel, and

PowerPoint so that you can create documents, and enhance the way you present information to an audience. You will also develop your practical skills in the use of these programmes.
Credits: 10

<http://www.sems.surrey.ac.uk/SoM/WBL/BScPD.asp> accessed 14 Jul. 04

Appendix 9: Changes in the Architecture of the Placement

Context within thesis: Chapter 10: *Hypotheses, methods and procedures*. The thrust of the statistical analysis is the investigation is posited upon the ability of the researcher to discriminate between two distinctively different forms of placement architecture. In the terminology adopted in the investigation one placement architecture is designated as *work environment*, while the other is termed *learning environment*. It is a central contention of the

thesis that these differences are substantive even though the processes involved in the changes to the architecture had evolutionary features.

Chronology and nature of the changes in the architecture of placement

Pre-1997 architecture: *work environment* model

- Decision to undertake placement at discretion of student;
- Active promotion of placement among students from arrival in Year One, with information sessions in Year Two.
- One-minute video presentation prepared by students in October/November of year preceding placement. (Some employers used this to create shortlists for interview).
- Detailed guidance given on CV preparation and presentation.
- Instruction on interview technique.
- Information on vacancies and application forms and procedures controlled by Placement Centre
- Interviews arranged by Placement Centre staff in conjunction with prospective hosts
- Placement Centre Staff arranged visits to students, who were largely passive in this respect
- Ten thousand word logbook to be submitted by students at end of placement on return for Degree year - late September. (Instructions for submission of logbook were brief and open ended; not infrequently these were submitted late and were of patchy quality. Logbooks were assessed by Placement Officer on a *pass* or *fail* basis. In principle the latter could result in a student not being classified as having a *Sandwich* award – in practice this was rarely the case).

1997–1998: Emergence of new architecture - *learning environment* model

- Compulsory registration scheme for aspiring placement students in year prior to placement
- Compulsory seminar programme: themes such as *Dress for Success*, *CV Preparation*, *Interview Technique*.
- Encouragement of students to use Placement Centre as ‘drop-in’ centre: general information on placement, access to specific materials relating to companies and current opportunities.

- Stronger promotion of the benefits of placement in the context of motivational techniques.

1998–1999: *learning environment* embedded

Main developments can be characterised as:

- A more structured and professional support system for students pre-placement
- Introduction of learning materials aimed at causing students to reflect on their placement learning
- Coursework at appropriate intervals and levels throughout the placement year
- Students to take ownership of their placement experience
- Grading of Logbook submissions and strict adherence to submission deadlines

Some of these are detailed below:

- *The Placement Handbook*: to be bought by aspiring placement students as a commitment to the programme; covering issues such as *dress-for-success*; dealing with telephone interviews; timetable for pre-placement seminar programme; expectations upon students in placement; what the student can expect to gain from placement.
- *Learning Materials*. As a result of research into the materials issued by many other institutions the materials offered specific objectives to the student in terms of reflecting on their placement learning.
- *Diary entries*. The diary to be kept weekly, with a quarterly review signed by the host supervisor and by the Placement Tutor during visits.
- *Self and Employer Assessments*. The student and employer completed identical assessments after the first and third quarters. These assessments allowed students and their supervisors to discuss and review the strengths and weaknesses of the target transferable skills.
- *Assignments*. Three assignments were set for the students. While they all had to be submitted at the end of the placement, a final draft of Assignment One has to be shown to the Placement Tutor during the first visit and a final draft of Assignment Two during the second visit. (Assignment One is largely descriptive of the student's position in the company: what they do in the team they are in and how that fits into the overall business; Assignment Two is an analysis of a central piece of work being

carried out by the student, ideally relating to their subject discipline; Assignment Three is an exercise in reflective learning - an overview of the entire placement with the scope to analyse, criticise and opine on all aspects of their year in industry and how it links with their programme of studies).

- *Employer's Guide.* The Employer's Guide contained comprehensive information on the role of a workplace supervisor during placement, including completed samples of learning objectives and assessments.
- *Health & Safety Guidelines, Forms and Briefings.* Guidelines were inserted in to the Learning Materials; Health & Safety forms were issued to employers. Students were not permitted to go on placement without attending the Health & Safety Briefing given by the university H&S Officer
- *Placement Visits – reconfiguring the student role:* A simple yet effective way of encouraging students to take more responsibility for their placement was to have the student arrange their placement tutor visits. Explicit advice about how to approach both university and workplace supervisors was given, including the amount of notice required. When businesses had more than one student a degree of cooperation and coordination was required.

Appendix 10A Diagnostic procedures and results for selection of main test statistic, with additional results of applying the alternative parametric test.

A1 Context within thesis: diagnostic procedures for selection of test statistic

This appendix presents the diagnostic statistics which led to the selection of the non-parametric Mann-Whitney U test as the most appropriate procedure for determining whether differences in academic performance as between placement students and non-placement students under varying architectures was significant.

A2 *Supplementary tests: t-tests for differences.* In the main body of the thesis (Chapter 10) the results of applying the Mann-Whitney test to the data sets are presented. However because of the debate on the relative merits and preconditions for the appropriateness of parametric or non-parametric tests for differences (alluded to in Chapter 10) the parametric t-test is applied to all of the data sets and the results are presented in this appendix after the presentation of the diagnostic statistics for normality of the data distributions. In only one case – highlighted in a note below and in Chapter 10, does the t-test lead to a different conclusion from the Mann-Whitney test.

Legend:

n = Number of modules in sample

D = Maximum distance measured between the curve of the actual distribution and the best-fit normal distribution in the Kolmogorov-Smirnov procedure

p = Probability that the given D -value could arise by random fluctuation in a sample taken from a normally distributed population

M = Mean score (percent)

SD = Standard deviation

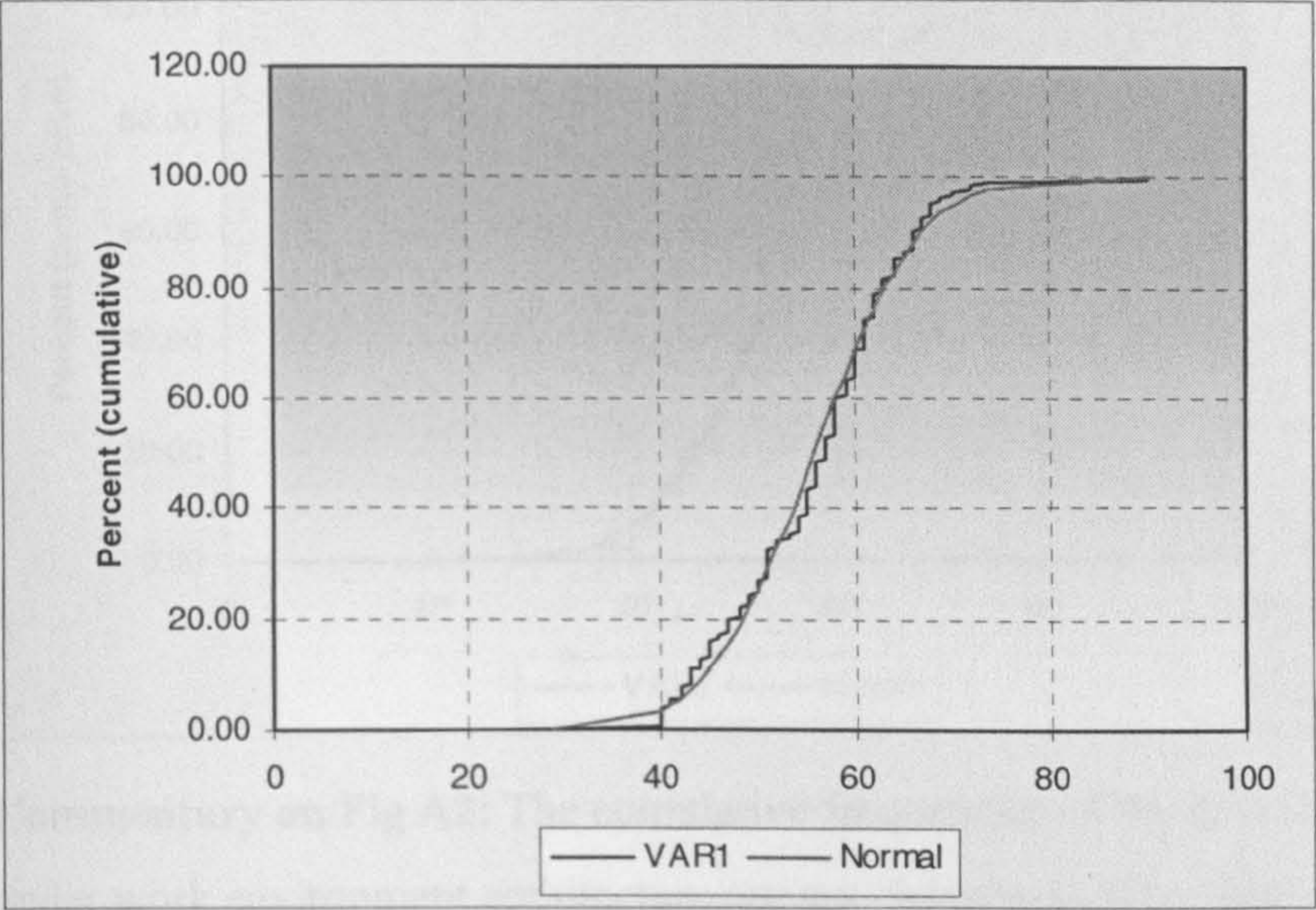
* t-statistic is significant at the 5% level

A3 *Diagnostic procedures carried out:*

- i. Presentation of the data set in the form of cumulative frequencies
- ii. Application of the Kolmogorov-Smirnov test to the data
- iii. Interpretation of the Kolmogorov-Smirnov test results: a non-significant (high) p -value ($p > 0.05$), indicates that the variable is normally distributed; a significant (low) p -value ($p < 0.05$), indicates that the variable is not normally distributed.
- iv. This sequence is applied in the first instance to the data sets concerning *work environment* architecture, followed by those of the *learning environment* architecture.

A4 **Diagnostic Statistics: Testing for Normality of Data Sets: *Work Environment* Architecture**

Fig A1 Cumulative frequencies Year 2 Placed, work environment



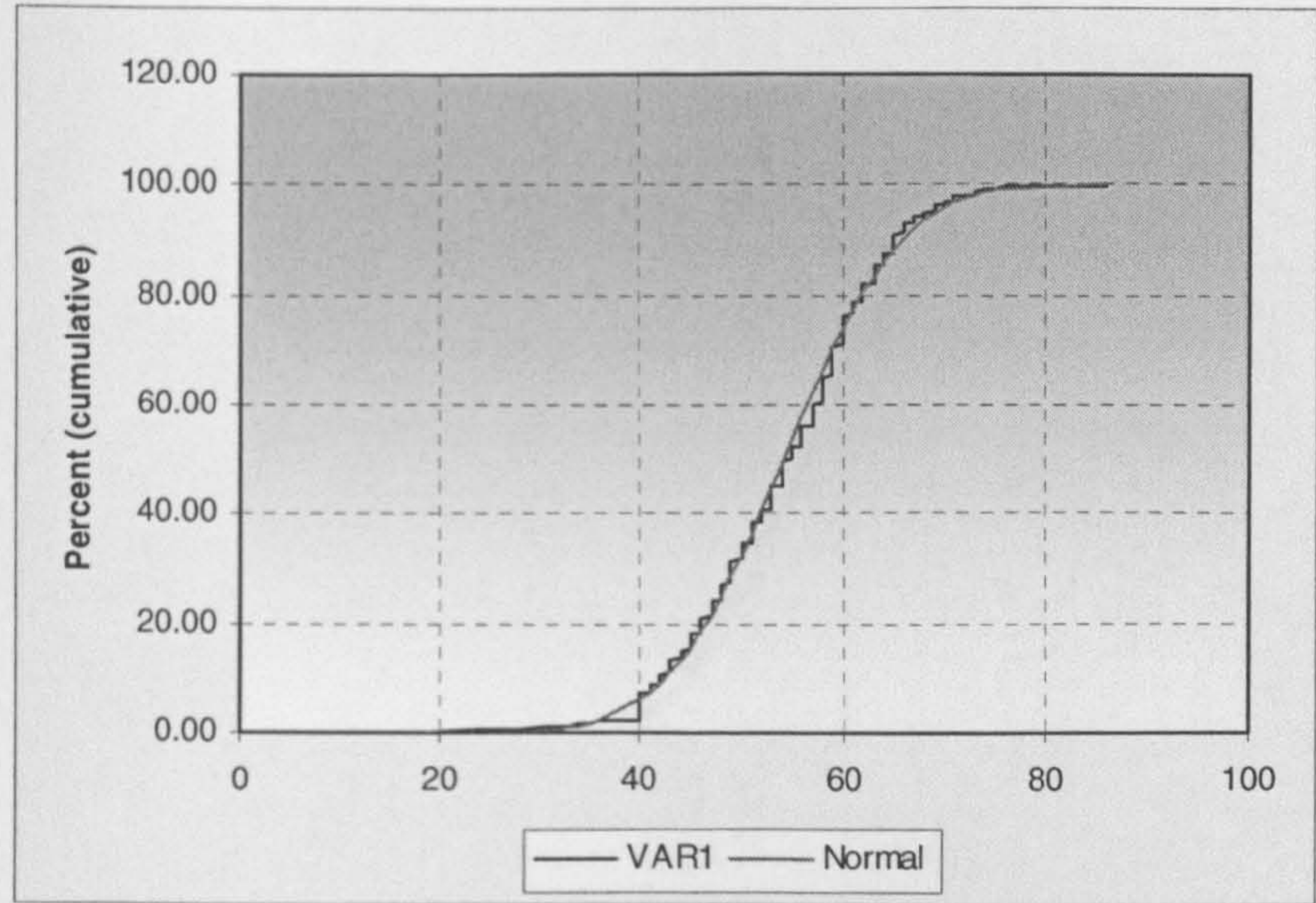
Commentary on Fig A1: The cumulative frequencies of the data set for Year 2 Placed under work environment architecture are not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A1

Table A1 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 2 Placed, work environment.

	n	D	p
Year 2 Placed	218	0.074	0.183

The high p-value ($p > 0.05$) indicates that the data set are normally distributed; a parametric test for differences between this and other data sets may be appropriate depending upon the distribution of the comparator data sets.

Fig A2 Cumulative frequencies Year 2 Unplaced, work environment



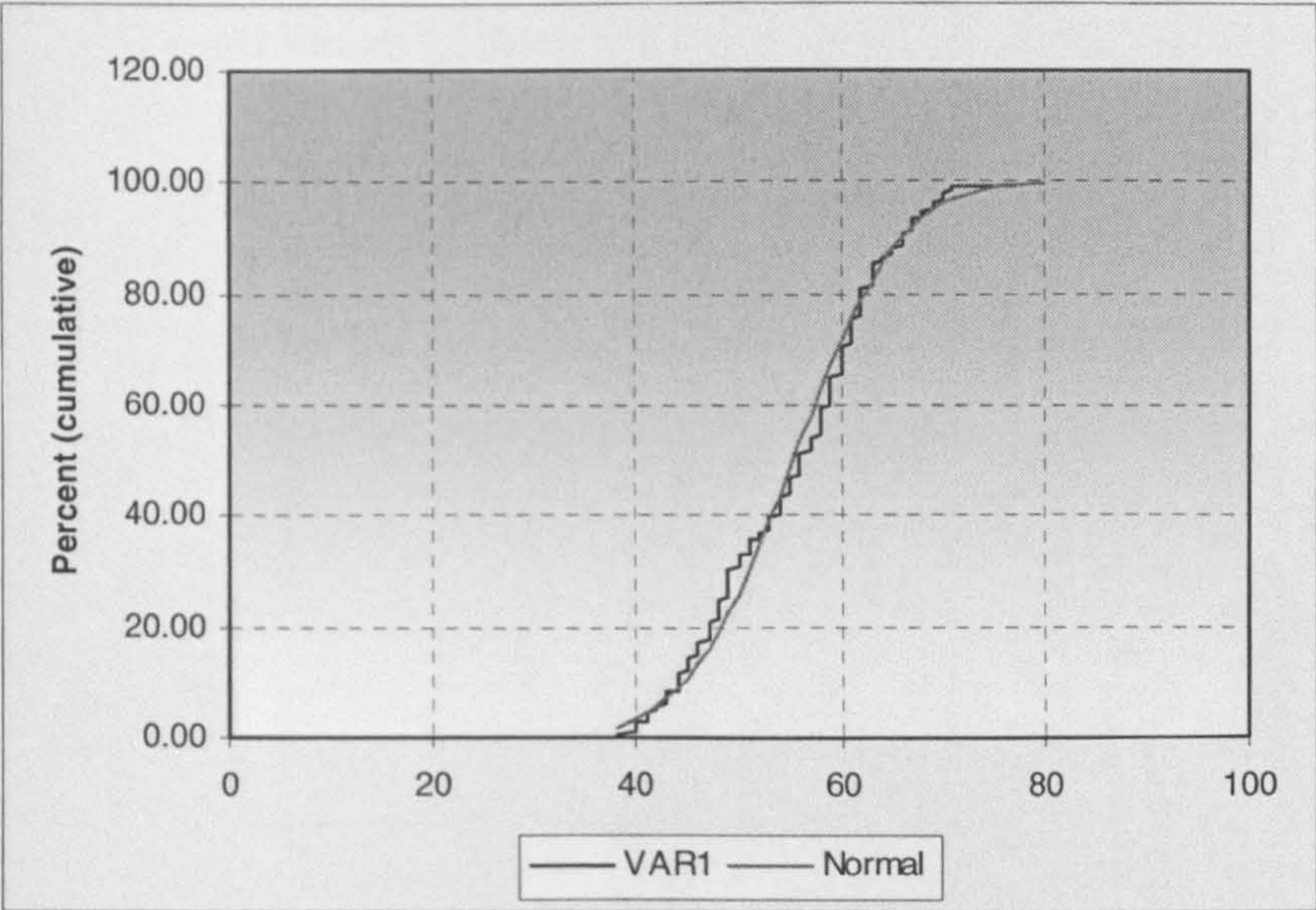
Commentary on Fig A2: The cumulative frequencies of the data set for Year 2 Unplaced under work environment architecture are not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A2

Table A2 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 2 Unplaced, work environment.

	n	D	p
Year 2 Unplaced	510	0.059	0.056

The high p-value ($p > 0.05$) indicates that the data set are normally distributed; a parametric test for differences between this and the other data sets may be appropriate, depending upon the distribution of the comparator data sets.

Fig A3 Cumulative frequencies Year 3 Placed, *work environment*



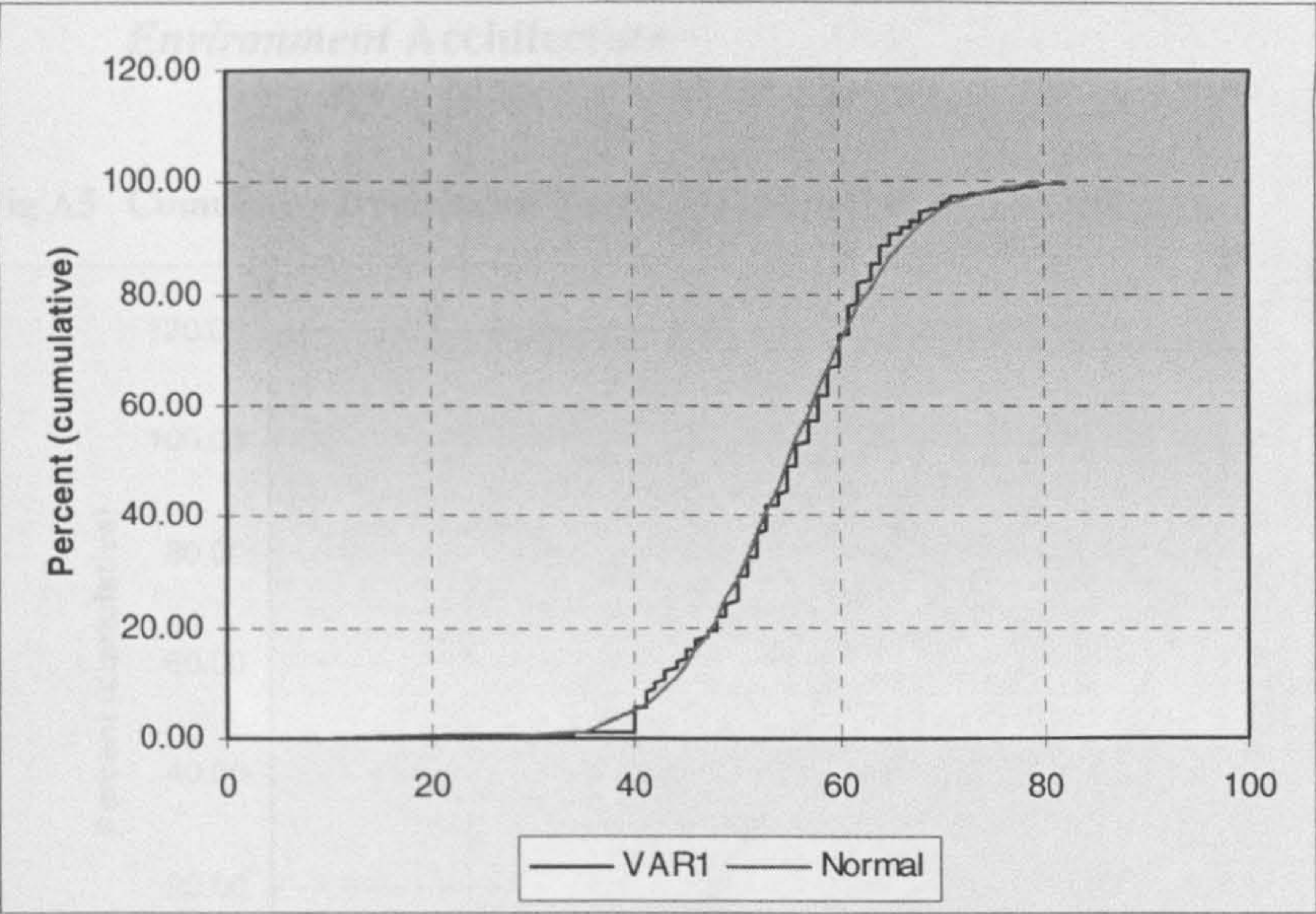
Commentary on Fig A3: The cumulative frequencies of the data set for Year 3 Placed under work environment architecture are not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A3

Table A3 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 3
Placed, *work environment*

	n	D	p
Year 3 Placed	218	0.086	0.082

The high p-value ($p > 0.05$) indicates that the data set are normally distributed; a parametric test for differences between this and the other data sets may be appropriate, depending upon the distribution of the comparator data sets.

Fig A4 Cumulative frequencies Year 3 Unplaced, *work environment*



Commentary on Fig A4: The cumulative frequencies of the data set for Year 3 Unplaced under work environment architecture are not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A4

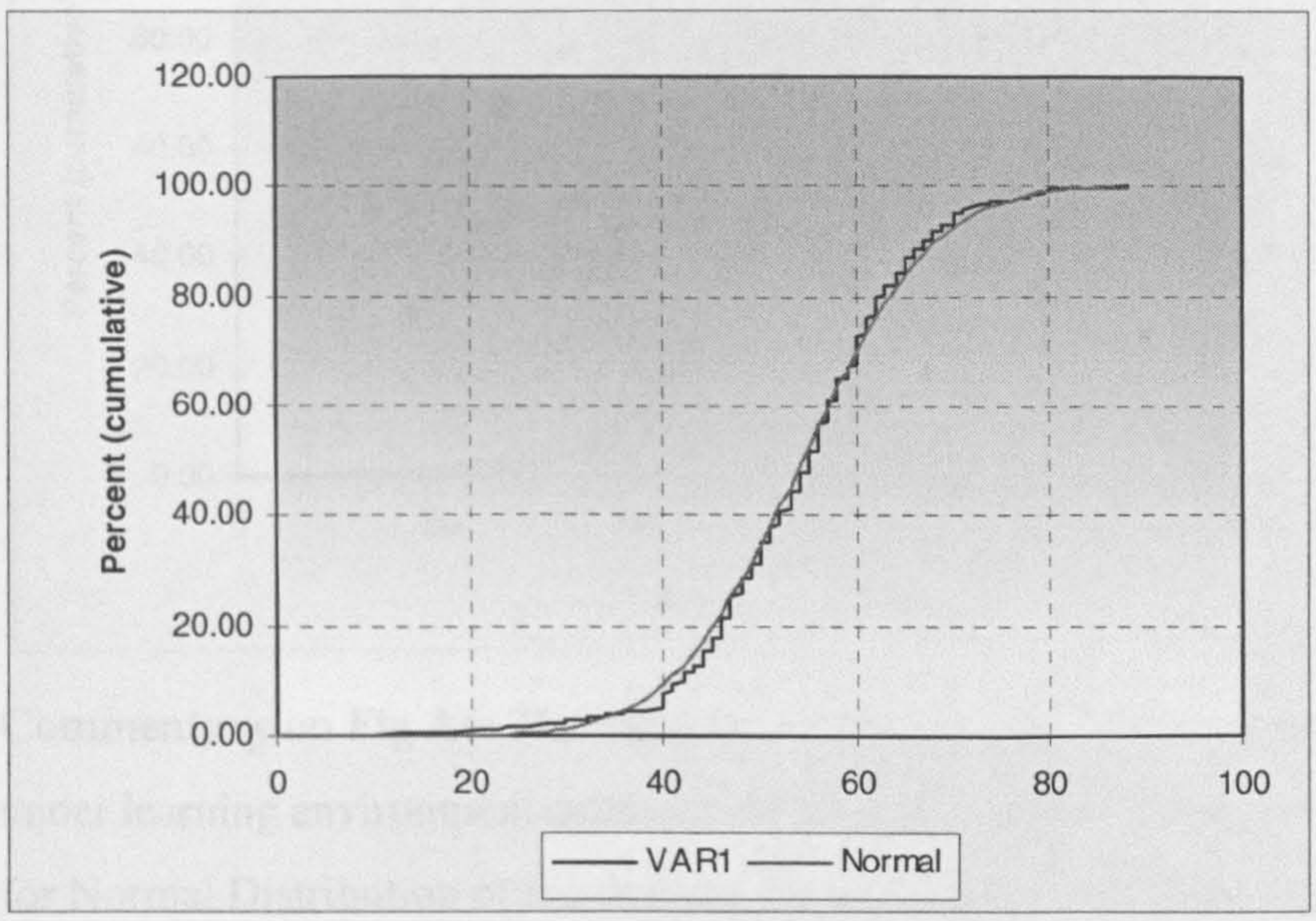
Table A4 Kolmogorov-Smirnov test for Normal Distribution of data set: Year 3
Unplaced, *work environment*

	n	D	p
Year 3 Unplaced	510	0.055	0.095

The high p-value ($p > 0.05$) indicates that the data set are normally distributed; parametric test for differences between this and the other data sets may be appropriate, depending upon the distribution of the comparator data sets.

A5 Diagnostic Statistics: Testing for Normality of Data Sets: *Learning Environment Architecture*

Fig A5 Cumulative frequencies Year 2 Placed, *learning environment*



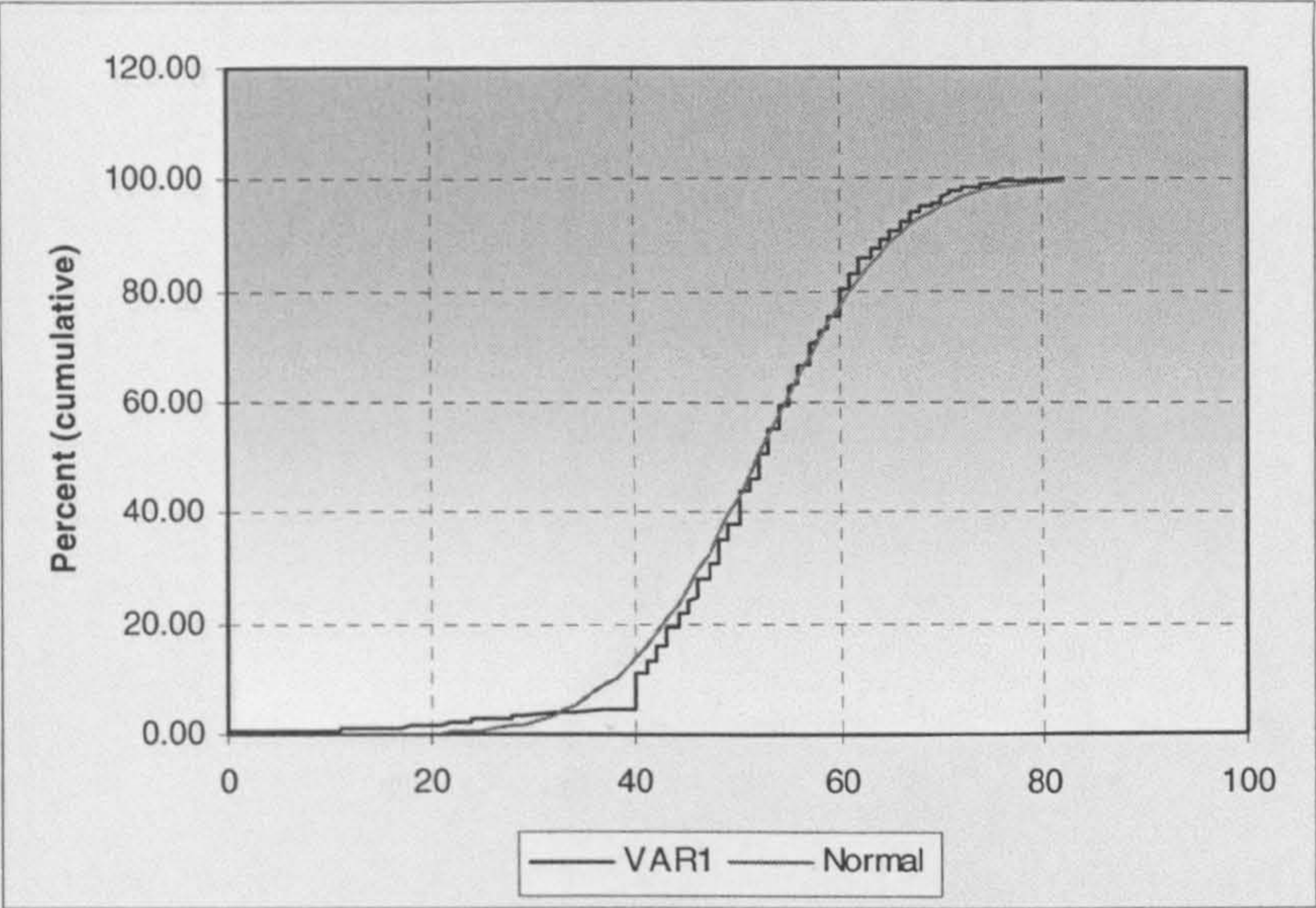
Commentary on Fig A5: The cumulative frequencies of the data set for Year 2 Placed under learning environment architecture are not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A5

Table A5 Kolmogorov-Smirnov test: Year 2 Placed, *learning environment*

	n	D	p
Year 2 Placed	717	0.048	0.069
Year 2 Unplaced			

The high p-value ($p>0.05$) indicates that the data set are normally distributed; a parametric test for differences between this and the other data sets may be appropriate depending upon the distribution of the comparator data sets.

Fig A6 Cumulative frequencies Year 2 Unplaced, *learning environment*



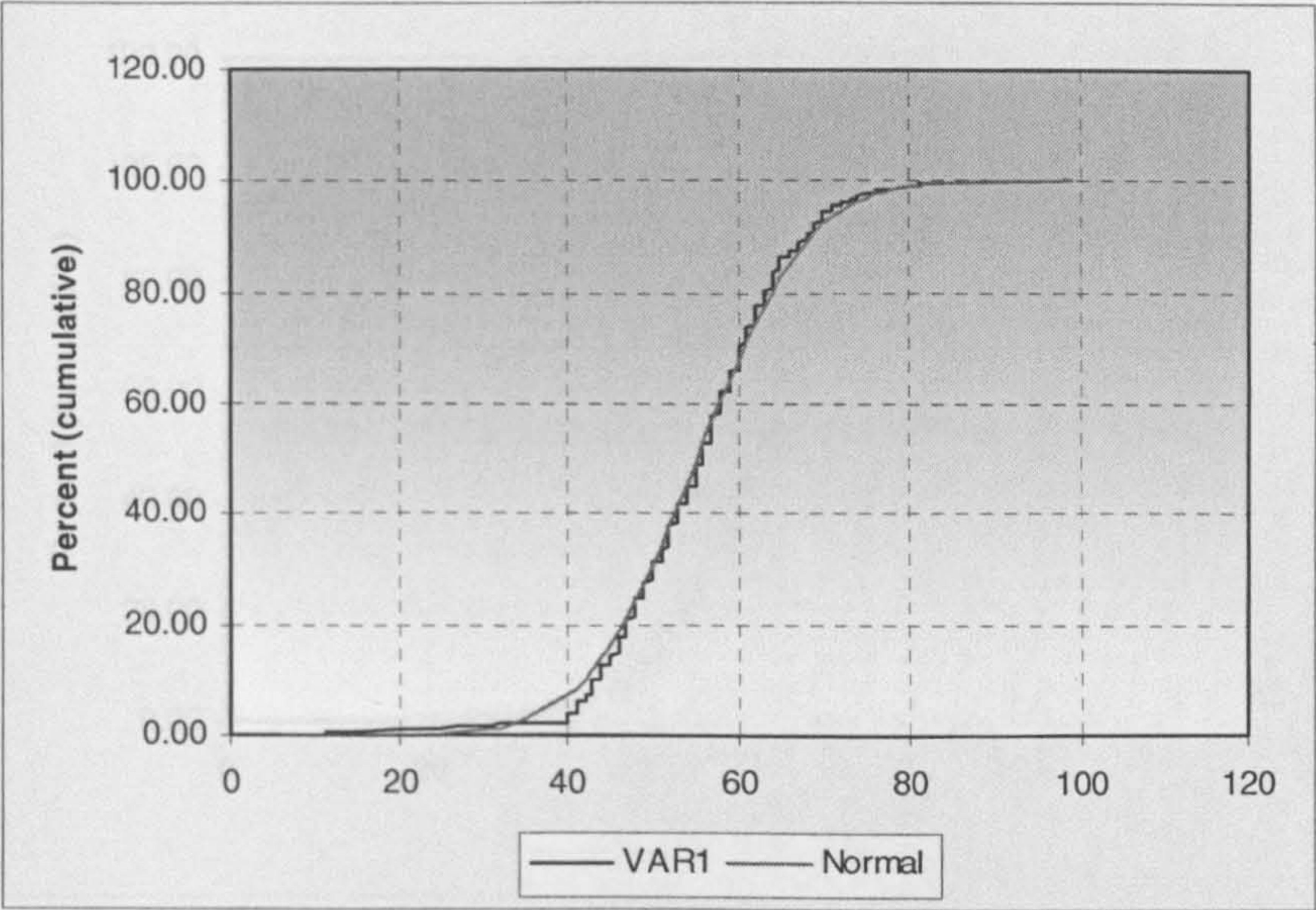
Commentary on Fig A6: The cumulative frequencies of the data set for Year 2 Unplaced under learning environment architecture are not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A6

Table A6 Kolmogorov-Smirnov test: Year 2 Unplaced, *learning environment*

	n	D	p
Year 2 Unplaced	768	0.092	0.0001

The low p-value ($p < 0.05$) indicates that the data set are not normally distributed; a non-parametric test for differences between this and any comparator data sets is appropriate.

Fig A7 Cumulative frequencies Year 3 Placed, *learning environment*



Commentary on Fig A7: The cumulative frequencies of the data set for Year 3 Placed under learning environment architecture are not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A7

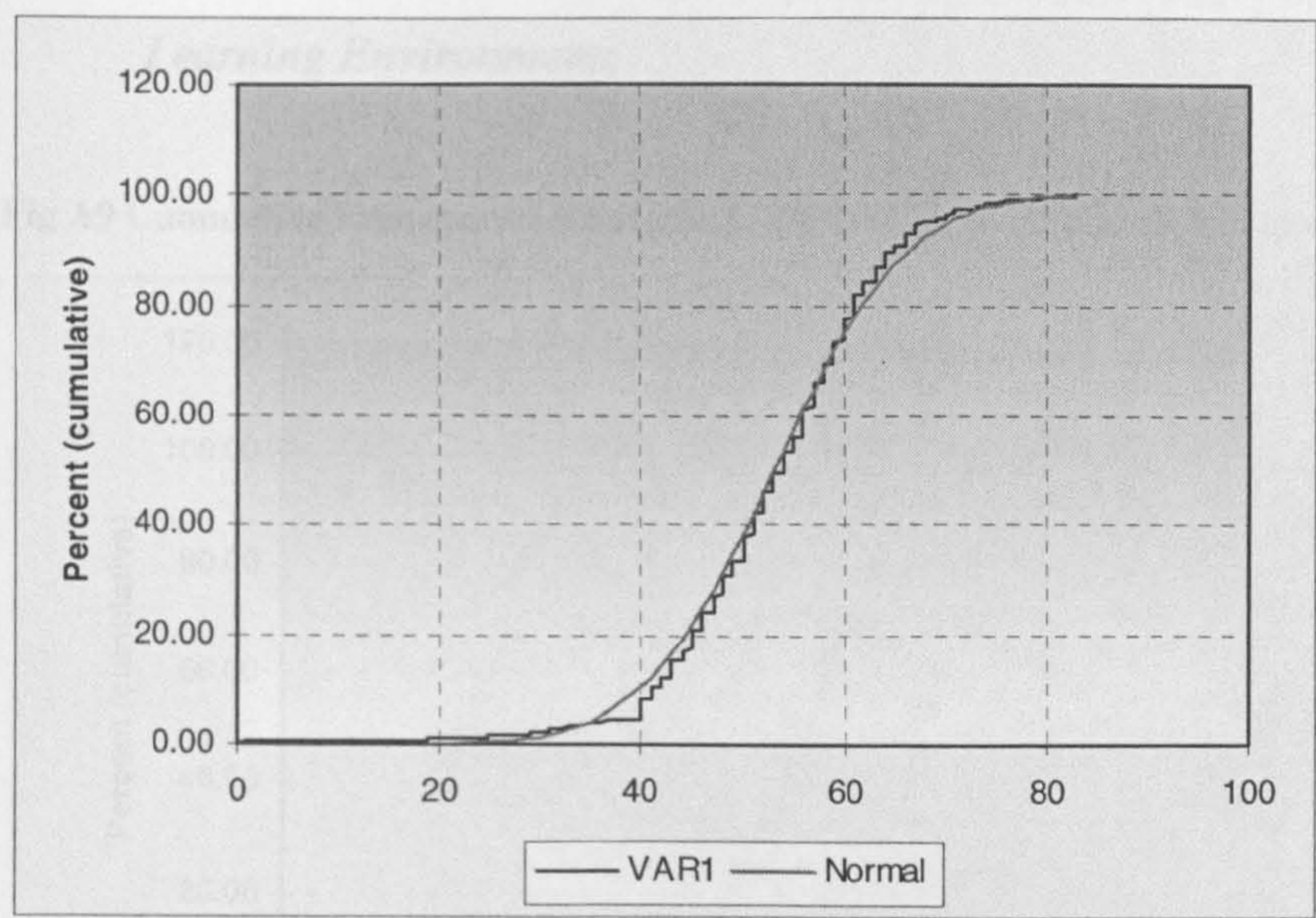
Table A7 Kolmogorov-Smirnov test: Year 3 Placed, *learning environment*

Table A7 Kolmogorov-Smirnov test: Year 3 Placed, *learning environment*

	n	D	p
Year 3 Placed	569	0.047	0.162

The high p-value ($p>0.05$) indicates that the data set are normally distributed; a parametric test for differences between this and any other data sets may be appropriate, depending upon the distribution of the comparator data sets.

Fig A8 Cumulative frequencies Year 3 Unplaced, *learning environment*



Commentary on Fig A8: The cumulative frequencies of the data set for Year 3 Unplaced under learning environment architecture are not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A8

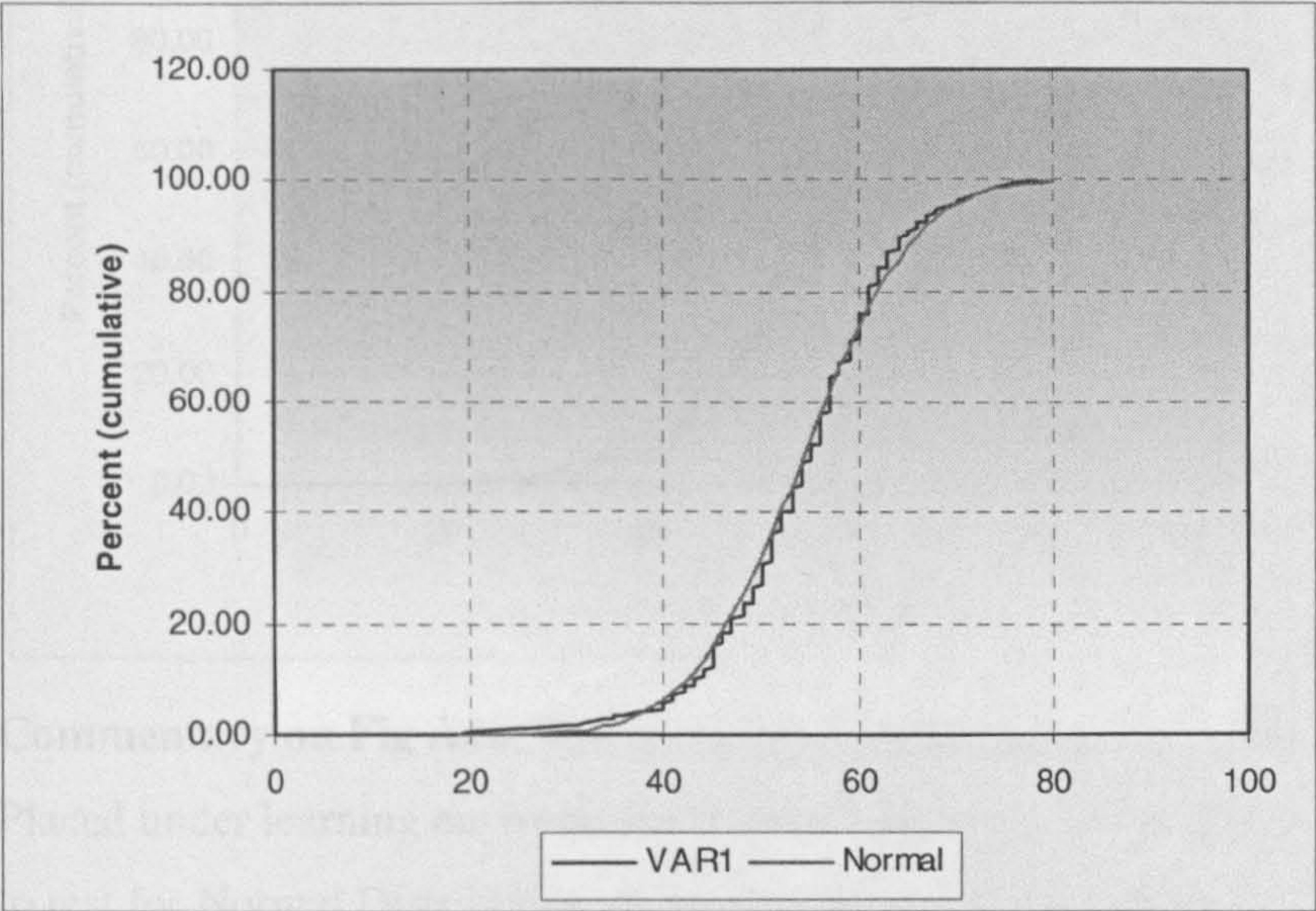
Table A8 Kolmogorov-Smirnov test: Year 3 Unplaced, *learning environment*

	n	D	p
Year 3 Unplaced	755	0.062	0.006

The low p-value ($p < 0.05$) indicates that the data set are not normally distributed; a non-parametric test for differences between this and other comparator data sets is appropriate.

A6 **Diagnostic Statistics: Inter-semester differences Year 3, Placed Cohort,**
Learning Environment:

Fig A9 Cumulative Frequencies Semester 1, Year 3 Placed, *learning environment*



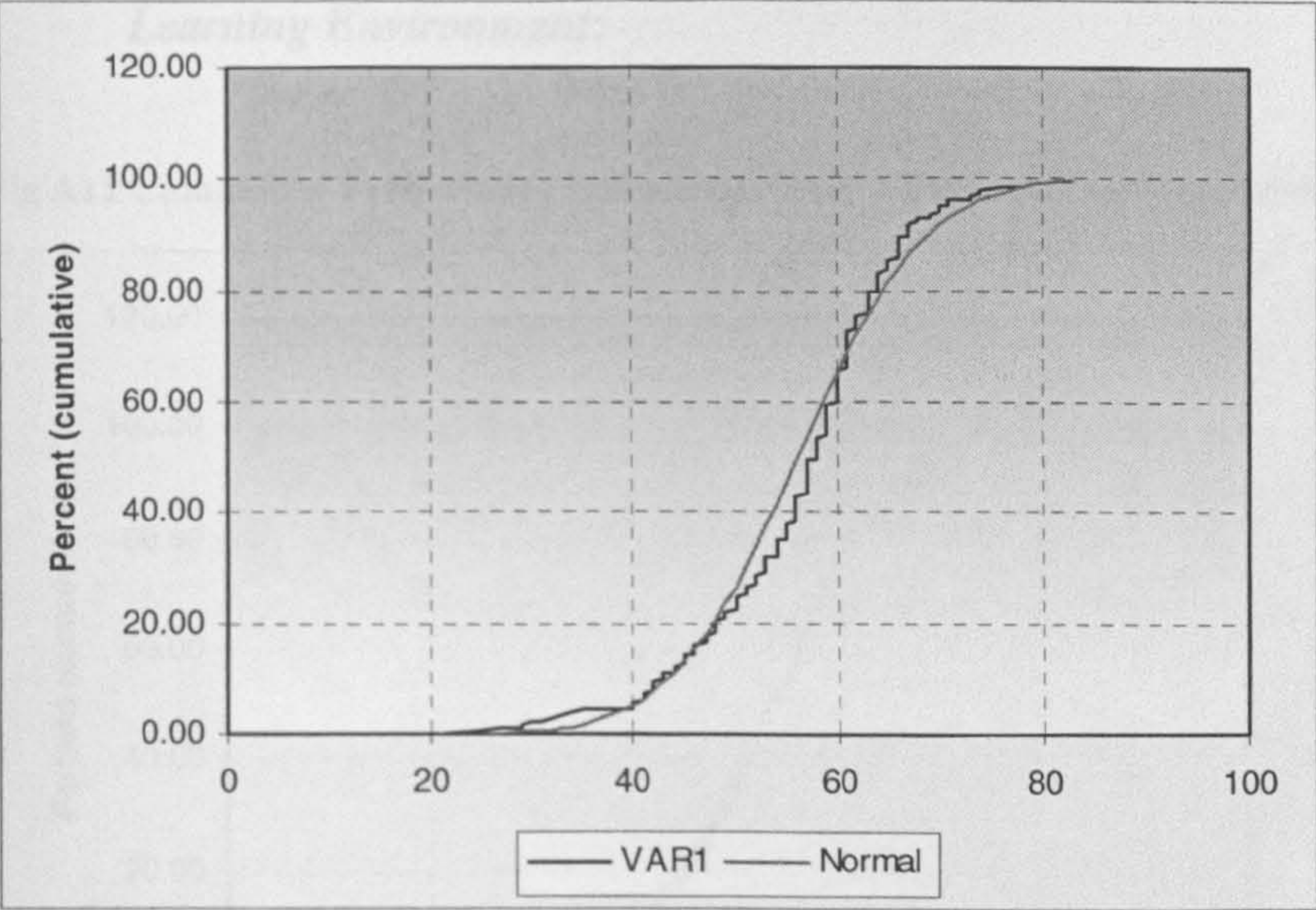
Commentary on Fig A9: The cumulative frequencies of the data set for Semester 1, Year 3 Placed under learning environment architecture is not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A9

Table A9 Kolmogorov-Smirnov test, Semester 1, Year 3 Placed, *learning environment*

	n	D	p
Year 3 Placed (Semester 1)	305	0.061	0.223

The high p-value ($p > 0.05$) indicates that the data set are normally distributed; a parametric test for differences between this and other data sets may be appropriate depending upon the distribution of the comparator data sets.

Fig A10 Cumulative Frequencies Semester 2, Year 3 Placed, *learning environment*



Commentary on Fig A10: The cumulative frequencies of the data set for Semester 2, Year 3 Placed under learning environment architecture is not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A10

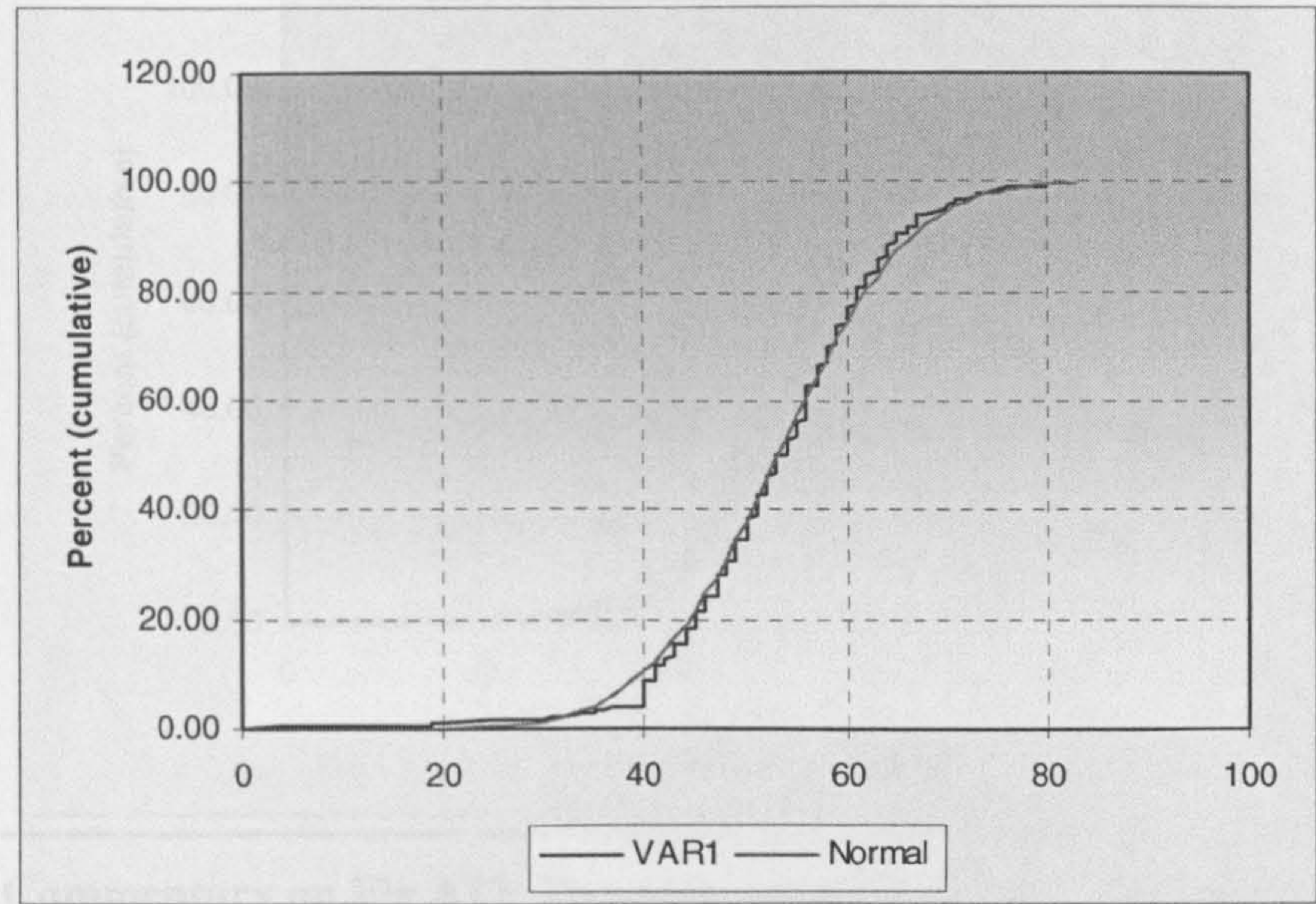
Table A10 Kolmogorov-Smirnov test, Semester 2, Year 3 Placed, *learning environment*

	n	D	p
Year 3 Placed (Semester 2)	273	0.111	0.002

The low p-value ($p < 0.05$) indicates that the data set are not normally distributed; a non-parametric test for differences between this and any other comparator data set is appropriate.

A7 **Inter-semester Differences: Diagnostic Statistics, Year 3, Unplaced Cohort,**
Learning Environment:

Fig A11 Cumulative Frequencies Semester 1, Year 3 Unplaced, *learning environment*



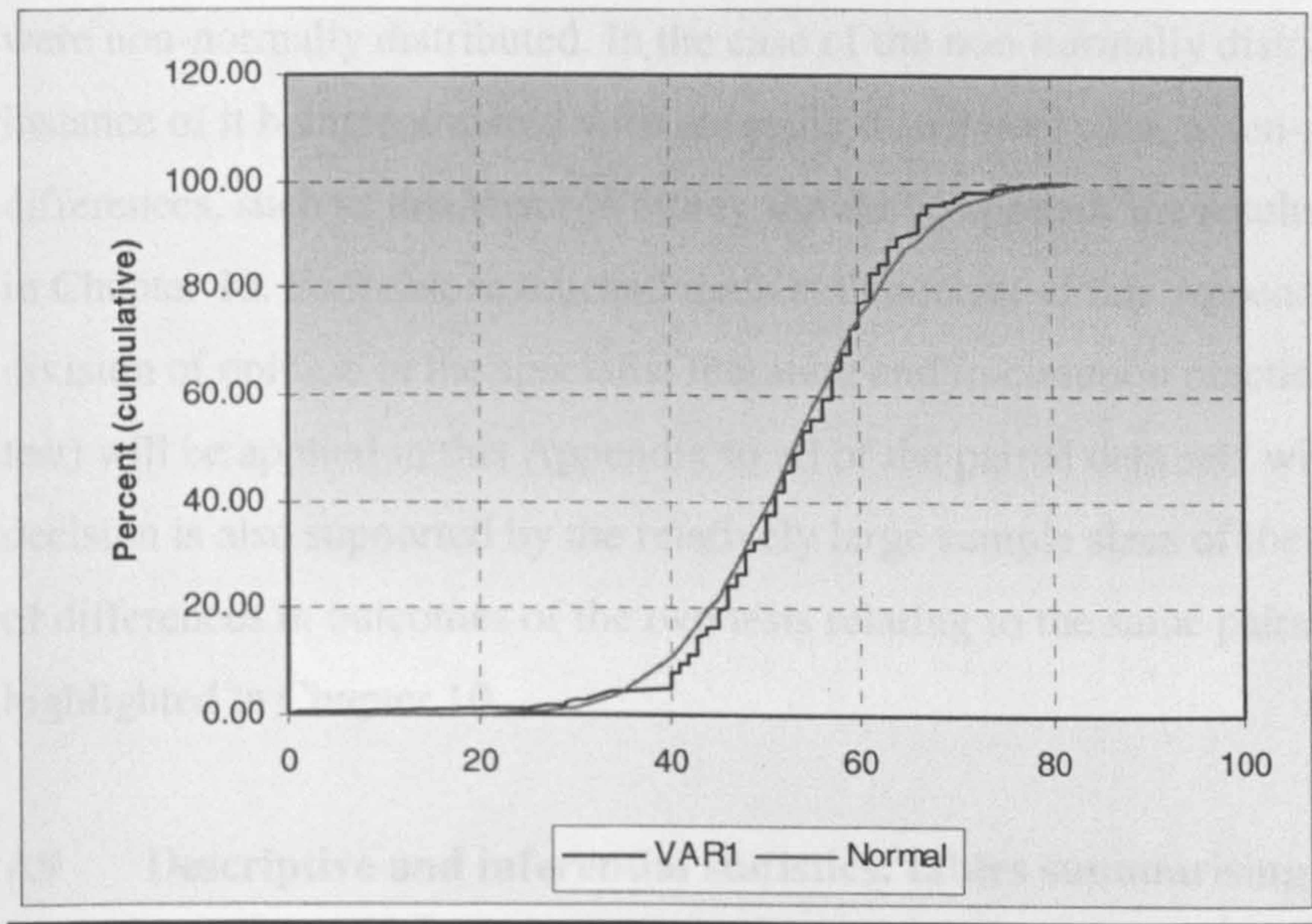
Commentary on Fig A11: The cumulative frequencies of the data set for Semester 1, Year 3 Unplaced under learning environment architecture is not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A11

Table A11 Kolmogorov-Smirnov test, Semester 1, Year 3 Unplaced, *learning environment*

	n	D	p
Year 3 Unplaced (Semester 1)	397	0.066	0.066

The high p-value ($p > 0.05$) indicates that the data set are normally distributed; a parametric test for differences between this and any other data sets may be appropriate depending upon the distribution of the comparator data sets.

Fig A12 Cumulative Frequencies Semester 2, Year 3 Unplaced, *learning environment*



Commentary on Fig A12: The cumulative frequencies of the data set for Semester 2, Year 3 Unplaced under learning environment architecture is not characterised by discontinuities; hence to test for Normal Distribution of the data set the Kolmogorov-Smirnov test statistic can be used. The results are shown below in Table A12

Table 10.4.1A Descriptive statistics Year 3 (pre-placement) work environment

Cohort	n	M	SD
Placed	218	55.79	8.71
Unplaced	510	54.20	9.14

Table A12 Kolmogorov-Smirnov test, Semester 2, Year 3 Unplaced, *learning environment*

	n	D	p
Year 3 Unplaced (Semester 2)	354	0.061	0.149

The high p-value ($p > 0.05$) indicates that the data set are normally distributed; a parametric test for differences between this other data sets may be appropriate depending upon the distribution of the comparator data sets.

A8 The test statistic for differences: the results of the diagnostic statistics presented above show that of the 12 data sets considered, 9 were found to be normally distributed and 3 were non-normally distributed. In the case of the non-normally distributed data and in any instance of it being compared with normally distributed data, a non-parametric test of differences, such as the Mann-Whitney should be applied; the results of these are presented in Chapter 10. For reasons touched upon at the outset of this Appendix, relating to the division of opinion in the specialist literature and in common practice, the parametric test (t-test) will be applied in this Appendix to all of the paired data sets with results presented. This decision is also supported by the relatively large sample sizes of the data sets. Any instances of differences in outcomes of the two tests relating to the same pairs of data sets, this will be highlighted in Chapter 10.

A9 Descriptive and inferential statistics: tables summarising results: *work environment* model

Summary results based upon mean module scores are given below for the *work environment* model with the t-statistic. All descriptive statistics tables are reproduced from Chapter 10.

Table 10.4.1A Descriptive statistics: Year 2 (pre-placement): *work environment*

Cohort	n	M	SD
Placed	218	55.79	8.71
Unplaced	510	54.20	9.14

One-tailed t-test of difference of means: $t = 4.474^*$

$*p < 0.05$

Table 10.4.3A Descriptive statistics Year 3 (post-placement): *work environment*

Cohort	n	M	SD
Placed (post-placement)	221	55.06	8.88
Unplaced	507	55.18	8.79

One-tailed t-test of difference of means: $t = -0.169$

Table 10.4.5A Descriptive statistics Years 2 & 3 (intra-cohort differences) *work environment*

Cohort	Year 2			Year 3			t-test of means
	n	M	SD	n	M	SD	
Placed	218	55.79	8.71	221	55.06	8.88	0.870
Unplaced	510	54.20	9.14	507	55.18	8.79	-1.735 *

* $p < 0.05$

A10 Descriptive and inferential statistics: tables summarising results: *learning environment model*

Table 10.6.1A Descriptive statistics Year 2 (pre-placement): *learning environment*

Cohort	n	M	SD
Placed	576	54.61	11.11
Unplaced	768	51.90	10.91

One-tailed t-test of difference of means: $t = 4.474^*$

*p<0.05

Table 10.6.3A Descriptive statistics Year 3 (post-placement): *learning environment*

Cohort	n	M	SD
Placed (post-placement)	569	55.30	10.36
Unplaced	755	53.08	10.41

One-tailed t-test of difference of means: $t = 3.842^*$

*p<0.05

Table 10.6.5A Descriptive statistics Years 2 & 3 (intra-cohort differences): *learning environment*

Year 2				Year 3			t-test of means
Cohort:	n	M	SD	n	M	SD	
Placed	576	54.32	10.92	569	55.30	10.36	-1.073
Unplaced	768	51.90	10.91	755	53.08	10.41	-2.168*

*p<0.05

Table 10.8.1A Descriptive statistics, inter-semester Year 3 Placed, *learning environment*

	n	M	SD
Semester 1	305	54.42	9.19
Semester 2	268	56.18	10.01

One-tailed t-test of difference of means: $t = - 2.172^*$

*p<0.05

Table 10.8.3A Descriptive statistics, inter-semester Year 3 Unplaced, *learning environment*

	n	M	SD
Semester 1	397	53.14	10.41
Semester 2	354	53.05	10.47

One-tailed t-test of difference of means: $t = 0.121$

A11 Summary of t-test of differences of means: the results of running the t-test of differences of means for all of the data sets produced test statistics which were in agreement with the Mann-Whitney tests of the same data sets as produced in Chapter 10, with one exception: that of the observed differences between years 2 & 3 of the unplaced cohorts under the *work environment* architecture. Under the Mann-Whitney test this difference is not significant; under the t-test it is shown to be significant (See Chapter 10, Table 10.4.7 and Table 10.4.5A above.)

Appendix 11: Placement Questionnaire

Context within thesis: Chapter 12, section 12.8. Transfer of learning theory would have tended to suggest that the reconfigured architecture (*learning environment*) would have increased the possibility of transfer of learning from the workplace to that of the academic domain. This was not fully supported by the statistical findings. One possible explanation for this is that the students were not fully aware of the what they might expect from the placement. This questionnaire was used to test the perceptions of the placement students in relation to what they perceived could be gained from placement. Since it was administered after they had returned from placement (approximately ten weeks after they had returned to studies and in the context of them having to submit at the same time a required element from

their placement), it was possible to discriminate between their perceptions of the placement both pre- and post placement. The questionnaire is presented below (with a minor “blanking” which refer to an administrative detail of the questionnaire and which is indicated and does not affect the questions themselves).

Dear student

The following questionnaire relates to your industrial placement experience and to matters relating to your studies on return from placement. I hope you can find the time to complete it and return it to [BLANKED OUT] in the Placement Unit Office as soon as possible.

Best wishes
John Duignan
Lecturer
e-mail: jduignan@paisley.ac.uk

Student Placement Questionnaire

Part One relates to your work placement
Part Two relates to your experience on return to studies from placement

Part One: work placement

1. Which of the following influenced you to undertake industrial placement?
(tick as many as apply)

- Parents
- Friends
- placement officer
- lecturer/tutor
- Other (specify)

2. What do you consider to be the optimal length of a placement period?

Six Months	<input type="checkbox"/>	One Year	<input type="checkbox"/>
Two Periods of Six Months	<input type="checkbox"/>	Other (please specify)	<input type="checkbox"/>

3. How much did the university *sell* Industrial Placement to you?

Moderately	<input type="text"/>	Strongly	<input type="text"/>
Very Strongly	<input type="text"/>	Not at all	<input type="text"/>

4. What were suggested as the main benefits of placement?
(Tick as many as apply)

- Practical experience of real world
- Financial
- Personal development
- Academic performance on return to studies
- Other (please specify)

5. Please indicate what you regard as the main benefits of Work Placement:
(list up to six benefits)

1.	<input type="text"/>	2.	<input type="text"/>
3.	<input type="text"/>	4.	<input type="text"/>
5.	<input type="text"/>	6.	<input type="text"/>

6. Would you describe your placement as:
(tick as appropriate)

- Structured?
- Unstructured?
- Partially structured?

7. Did your placement include a formal agreement between you, the employer and the university?

Yes

No
Don't know

**8. Did the placement agreement you had with your placement company include any of the following
(Please tick appropriately)**

- | | |
|------|----------------------------------------------------------------------------------------------------------|
| i. | a portfolio or logbook |
| ii. | statement of expected outcomes of placement |
| iii. | appraisal of performance in the workplace |
| iv. | presentation to tutor and fellow students |
| v. | assessment for academic credit for placement |
| vi. | a formal learning contract involving the student, academic-placement supervisor and workplace supervisor |

**9. Do you think that the value to you of your placement experience would have been different had it been subject to formal assessment and full academic credit?
(as if it were assessed coursework or a module exam)
please tick as appropriate**

Yes
No
Don't know

PART TWO: EXPERIENCE ON RETURN TO STUDIES FROM PLACEMENT

10. Describe your motivation to study on your return from placement:

- i. highly motivated
- ii. moderately motivated
- iii. poorly motivated
- iv.

11. To what extent do you consider your placement experience to have been related to your academic studies prior to placement?

Strongly related
Moderately related
Unrelated

12. To what extent to you consider your placement experience to have been related to your studies on return to studies?

Strongly related
Moderately related
Unrelated

13. Would you expect Work Placement to have a positive/negative/neutral impact on academic performance?
(tick as appropriate)

Positive	<input type="checkbox"/>	Negative	<input type="checkbox"/>
Neutral	<input type="checkbox"/>	Don't know	<input type="checkbox"/>

14. Can you think of any reason why Work Placement might lead to enhanced academic performance on return to undergraduate studies?

Yes
No

If yes please explain:

15. Can you think of any reason why Work Placement might lead to reduced academic performance on return to undergraduate studies?

Yes

No

If yes please explain:

--

**16. Do you think that your placement experience will result in a different academic performance in degree finals than would otherwise have been the case had you not undertaken placement?
(please tick as appropriate)**

Same

Enhanced

Reduced

Thank you for taking the time to complete this questionnaire. If you would like details of the analysis of the responses please contact me in the early part of summer 2001.

John Duignan

e-mail: jduignan@paisley.ac.uk

**John Duignan
Paisley Business School
University of Paisley
PAISLEY
PA1 2BE**

**Tel: 0141-848-3379
E-mail: jduignan@paisley.ac.uk
Fax: 0141-848-3618**

Appendix 12: Student Responses to Questionnaire

Context within thesis: Chapter 11. See also Appendix 10 context. As well as descriptive statistics on student responses, there are also commentaries on the responses. *Literals* are presented separately at the end. Taken in the round the responses tend to support the view that the placement cohort did have some expectation of positive transfer of learning (though not in these terms) from the placement to academic performance. However there was some confusion as to whether there had been learning outcome expectations from the placement itself – this is seen in the literals. Additionally it is interesting that the issue of motivation features in the literals.

The basic statistical analysis of responses was undertaken using *Snap4 (version 4.1)*

The Questionnaire:

Dear student

The following questionnaire relates to your industrial placement experience and to matters relating to your studies on return from placement. I hope you can find the time to complete it and return it to [BLANK OUT] in the Placement Unit Office as soon as possible.

Best wishes

John Duignan

Lecturer

e-mail: jduignan@paisley.ac.uk

Student Placement Questionnaire

Part One relates to your work placement

Part Two relates to your experience on return to studies from placement

Part One: work placement

**3. Which of the following influenced you to undertake industrial placement?
(tick as many as apply)**

Parents

Friends

placement officer

lecturer/tutor

Other (specify)

RESPONSES:

Base 31

Missing/ No reply	0	
parents	13	(41.9%)
friends	12	(38.7%)
placement officer	30	(96.8%)
lecturer	8	(25.8%)
other	4	(12.9%)

COMMENTARY

The responses confirm that the placement experience is primarily promoted by the university placement officer (96.8% of respondents mentioned this as source of influence). This on its own does not provide a measure of the strength of promotion of placement by the university; however *if* it cross-tabulates positively with responses to question 3 (**How much did the university *sell* Industrial Placement to you?**) question 4 (**What were suggested as the main benefits of placement?**) in relation to the academic performance aspect, and questions 14 and 15 (in a negative cross-tabulation between them (**Can you think of any reason why Work Placement might lead to *enhanced academic performance* on return to undergraduate studies? And Can you think of any reason why Work Placement might lead to *reduced academic performance* on return to undergraduate studies?)** then these would be indicative of the weight attached by the university to placement and act as a proxy of the strength with which it has been promoted by the university. In turn

By reference to responses to Q3 it can be seen that some 74% of respondents considered that the university promoted placement either *strongly* or *very strongly*.

Now, if their is a presumption in favour of placement at the core of the university’s philosophy of education, and if this in turn affects the perceptions of the students who have undertaken placement, then one would expect that there would be a stronger sense of the positive impacts of placement upon the students, reflected in turn in them being able to perceive more reasons for enhanced academic performance than reduced academic performance.

By reference to Qs 14 and 15 it is observed that for positive impacts on academic performance:

yes	24	(77.4%)
no	7	(22.6%)

and for negative impacts upon academic performance

yes	18	(58.1%)
no	13	(41.9%)

From the above then 77.4% of placement students were able to identify at least one reason why they believed that placement would enhance academic performance, while only 58.8% could identify at least one reason why it might reduce academic performance. Alternatively put, almost double the number of students in the sample could not identify a reason why placement might reduce academic performance than those who could not identify a reason why it might enhance academic performance.

4. What do you consider to be the optimal length of a placement period?

Six Months	<input type="text"/>	One Year	<input type="text"/>
Two Periods of Six Months	<input type="text"/>	Other (please specify)	<input type="text"/>

RESPONSES:

Base	31	
Missing/No reply	0	
6 months	4	(12.9%)
2*6 months	2	(6.5%)
1 year	25	(80.6%)
other	0	

COMMENTARY

The overwhelmingly (80.6% of respondents) the placement students identified their placement period duration as being optimal (1 year – the extended single placement model).

One would then expect this to cross-tabulate positively with response that in some way reflect “satisfaction” or positive outcomes associated with placement; or additionally, with attributes that were suggested as being positive outcomes and those perceived by the student post-experience. For example the relationship between Qs 4 and 5 which concern the suggested main benefits of placement and those identified by the placement students.

3. **How much did the university *sell* Industrial Placement to you?**

Moderately	<input type="text"/>	Strongly	<input type="text"/>
Very Strongly	<input type="text"/>	Not at all	<input type="text"/>

RESPONSES

Base	31		
Missing/No reply	0		
moderately	8	(25.8%)	
very strongly	9	(29.0%)	
strongly	14	(45.2%)	
not at all	0		

COMMENTARY: SEE Q1

5. **What were suggested as the main benefits of placement?**

(Tick as many as apply)

- Practical experience of real world
- Financial
- Personal development
- Academic performance on return to studies
- Other (please specify)

RESPONSES

Base	31	
Missing/No reply	0	
practical experience	31	(100%)
financial	18	(58.1%)
personal development	26	(83.9%)
academic performance on return to studies	18	(58.1%)
other	8	(25.8%)

COMMENTARY

While 100% of respondents mentioned practical experience of real world as being a suggested benefit of placement, personal development took precedence over both financial and academic benefits (83.9% as opposed to 58.1% for each of financial and academic benefits). If a ranking scheme is adopted, then academic is joint third with financial. This pretty much is consistent with the placement officers response that he sold placement strongly, and did mention academic benefits but not as the prime reason for taking placement.

5. Please indicate what you regard as the main benefits of Work Placement:
(list up to six benefits)

1.	<div></div>	2.	<div></div>
3.	<div></div>	4.	<div></div>
5.	<div></div>	6.	<div></div>

RESPONSES:

SEE LITERALS

6. Would you describe your placement as:
(tick as appropriate)

Structured?

Unstructured?

Partially structured?

RESPONSES

Base	31	
Missing/No reply	1	
structured	9	(29%)
unstructured	4	(12.9%)
partially structured	17	(54.8%)

COMMENTARY

Behind this question is the need to identify how the student experiences placement organisation at the place of work. This would enable one to categorise the typical placement model experienced. The expectation would be that both learning and overall satisfaction of placement would be higher in a structured environment. (though not exclusively so: where the student is given a problem-solver role, reacting to changing needs or filling a role that has never been used by the firm, may lead to equally useful benefits to the student.) Overall, more than 80% of respondents reported that their placement was either structured or partially structured. One would expect this to cross-tabulate positively with placement being viewed as having been positively related to academic studies prior to placement and to

having had a positive effect upon academic performance on return to studies (or at least the expectation of same).

7. Did your placement include a formal agreement between you, the employer and the university?

- Yes
- No
- Don't know

RESPONSES:

Base	31	
Missing/No reply	0	
yes	20	(64.5%)
no	4	(12.9%)
don't know	7	(22.6%)

COMMENTARY

The issue here is the extent to which the students' perception of their placement arrangements accord with the objective reality as agreed between the university and the company. The expectation would be that to the extent the student was aware that there was a formal tripartite placement agreement there should be a more positive impact of placement. (this could be offset to the extent that there was a divergence between the students' expectations and the actual experience of the placement).

Additionally one would expect this to positively crosstabulate with the elements in q8 responses.

8. Did the placement agreement you had with your placement company include any of the following
(Please tick appropriately)

- vii.

a portfolio or logbook

viii.

statement of expected outcomes of placement

ix.

appraisal of performance in the workplace

x.

presentation to tutor and fellow students

xi.

assessment for academic credit for placement

xii.

a formal learning contract involving the student, academic-placement supervisor and workplace supervisor

RESPONSES:

Base	31	
Missing/No reply	1	
portfolio/logbook	26	(83.9%)
statement of expected outcomes of placement	19	(61.3%)
appraisal of performance in the workplace	24	(77.4%)
presentation to tutor and fellow students	3	(9.7%)
assessment for academic credit for placement	5	(16.1%)
formal learning contract involving student/placement tutor/work supervisor	10	(32.3%)

COMMENTARY

Every placement student was excepted to complete a logbook, although only 83.9% of the sample seemed to appreciate this. This result is surprising given that the questionnaires were distributed to the students with a letter reminding them of the deadline for the submission of the logbook. Some 16% of the sample appear to believe that their placement was assessed for academic credit. Strictly speaking this was not the case at all. The only explanation that can be offered is that the students concerned have misunderstood the question and have confused the conditions required for satisfying the award of a sandwich degree with formal academic assessment. Overall, though, the important point from the thesis perspective is that they

overwhelmingly had the perception of the expectations of formal outcomes from the placement.

**9. Do you think that the value to you of your placement experience would have been different had it been subject to formal assessment and full academic credit?
(as if it were assessed coursework or a module exam)
please tick as appropriate**

Yes

No

Don't know

RESPONSES:

Base	31	
Missing/No reply	0	
yes	13	(41.9%)
no	10	(32.3%)
don't know	8	(25.8%)

COMMENTARY

There is some ambiguity in the wording of this question since it does not indicate whether the expectation is that the value would have been enhanced or diminished by formal assessment and academic credit. In terms of the responses, there is no clear indication either way in favour of assessment and full academic credit for placement, with 58% either believing that it would make no difference or not knowing if it would make a difference to the value of their placement.

PART TWO: EXPERIENCE ON RETURN TO STUDIES FROM PLACEMENT

11. Describe your motivation to study on your return from placement:

- v. highly motivated
- vi. moderately motivated
- vii. poorly motivated

RESPONSES:

Base	31	
Missing/No reply	0	
highly motivated	13	(41.9%)
moderately motivated	10	(32.3%)
poorly motivated	8	(25.8%)

COMMENTARY

Placement officers have questioned the motivation of some students upon return to study, suggesting that in a significant proportion of cases it might be reduced by the placement for several reasons. Among these reasons suggested have been: that the work placement has been so enjoyable that the student wants to return as soon as possible; that the student has lost the habit of studying; that changed financial and social experiences – the student as student compared with the student as corporate worker; that the work experience was a poor one and the student is disillusioned with his/her choice of course career.

As an explanation of the noted failure to enhance academic performance, the survey suggest little evidence for this: 74% of respondents adjudged them selves to be either moderately or strongly motivated on return to studies, with only 25% reporting being poorly motivated.

11. To what extent do you consider your placement experience to have been related to your academic studies prior to placement?

Strongly related

Moderately related
Unrelated

RESPONSES:

Base	31	
Missing/No reply	0	
strongly related	6	(19.4%)
moderately related	18	(58.1%)
unrelated	7	(22.6%)

COMMENTARY

It can reasonably be assumed that the closer the work experience is perceived to be to studies, the “better the fit” of the placement and the programme of studies, and consequently one might assume the better the transfer of learning. With less than 23% reporting that their studies were unrelated to their work experience and more than 77% reporting either moderately or strongly related, one would expect the conditions for beneficial transfer of learning were present to some significant degree.

12. To what extent to you consider your placement experience to have been related to your studies on return to studies?

Strongly related
Moderately related
Unrelated

RESPONSES:

Base	31	
Missing/No reply	0	
strongly related	3	(9.7%)
moderately related	16	(51.6%)
unrelated	12	(38.7%)

COMMENTARY

In this case the question is the nature of the relationship between experience and studies post experience. Taken together with responses to q11, there is some evidence of an asymmetrical relationship, with almost 40% of the respondents reporting that their work experience was unrelated to their studies on return to university. This raises the question as to whether the direction of the transfer of learning was mainly in one direction: from studies to work experience being strongly so; from work experience to studies being moderately so.

13. Would you expect Work Placement to have a positive/negative/neutral impact on academic performance?
(tick as appropriate)

Positive

☐

Negative

☐

Neutral

☐

Don't know

☐

RESPONSES:

Base	31	
Missing/No reply	0	
positive	24	(77.4%)
neutral	4	(12.9%)
negative	3	(9.7%)
don't know	0	

COMMENTARY

On the basis that expectations influence perceptions of reality and outcomes, there would appear to be a strong expectation that work experience would have a positive influence on academic performance. Thus the conditions for a positive transfer would appear to have been enhanced (although this may have been counterbalanced by the experiences reported in q12.

14. Can you think of any reason why Work Placement might lead to enhanced academic performance on return to undergraduate studies?

Yes
No

RESPONSES:

Base	31	
Missing/No reply	0	
yes	24	(77.4%)
no	7	(22.6%)

COMMENTARY

Respondents were able by a factor of more than three-to-one to be able to think of at least one reason why placement might enhance academic achievement on return to studies. This is consistent with the responses to q13

If yes please explain:

Q14.1 LITERALS

15. Can you think of any reason why Work Placement might lead to reduced academic performance on return to undergraduate studies?

Yes
No

RESPONSES:

Base	31	
Missing/No reply	0	
yes	18	(58.1%)
no	13	(41.9%)

COMMENTARY

While more respondents were able to think of reasons why placement might degrade academic performance than those who could not (58.1% and 41.9% respectively), the high proportion that were not able to think of a single reason for degradation of studies in conjunction with the response rates in q14, suggest a strong asymmetry in perceptions of placement and its impact upon academic performance in favour of a positive outcome.

If yes please explain:

Q15.1 LITERALS

17. Do you think that your placement experience will result in a different academic performance in degree finals than would otherwise have been the case had you not undertaken placement?
(please tick as appropriate

Same
Enhanced
Reduced

RESPONSES:

Base	31	
Missing/No reply	0	
same	10	(32.3%)
enhanced	16	(51.6%)
reduced	5	(16.1%)

COMMENTARY

The issue here is what the students expected from their placement as experienced. More than 50% expected overall that their work placement would enhance their academic performance; with the remainder believing that it would either have no significant impact (32.3%) or might even have reduced it (16.15). this latter percentage might even be a proxy for those students whose work placement did not meet their expectations and was somehow perceived to have been a negative experience.

Responses to literals in the student survey:

Q5: Please indicate what you regard as the main benefits of Work Placement:

(list up to six benefits)

commercial practice; working with others; salary
financial; real world experience; CV
working with others; maturity; money

all benefits listed in Q4

all listed in Q4 plus CV

practical experience of real world; financial; CV

professional experience; fresh challenges; personal development

experience of real world; financial; academic performance

as listed in Q4 plus "shows good on job forms"

financial; real experience; break of studies.

financial; real experience of work.

all five in Q4 plus "would go on my CV"

work experience; financial; maturity; good on CV.

all in Q4 plus "break from studies"

CV; practical experience.

financial; wider experience of real business; meeting new people; break from uni!

as given in Q4

chance to see other opportunities

enhanced confidence; opportunity to socialise; gained technical insights;

negotiation/presentation.

experience; training; applications; development.

relevant experience; good reference; company invests in you; new motivation at uni; personal development.

experience; changed attitude; gained knowledge; matured; money.

self-discipline; practical experience; uni motivation; confidence; interpersonal skills;

financial.

real business experience; develop skills; teamwork; work to deadlines; learn by doing; money.

experience in field of study; increase knowledge; meet new people.

practical experience; personal development; performance on return to studies; financial.

chance to try out job; confidence builder; salary; responsibilities; computer skills; essay skills.

contacts for future; firsthand experience; break from studies; challenge; CV; flavour of work.

experience; training; personal development.

practical experience; real life examples; increased skills/ organisation dynamics.
 practical experience of real world; personal development; good for CV; financial.

Q14.1 LITERALS: Can you think of any reason why Work Placement might lead to enhanced academic performance on return to undergraduate studies?

Yes

No

If yes please explain:

better motivation for studies

better organisation of time for studies

if related to studies. If not then no.

if a very good fit between both

greater confidence; older.

you might tackle work better.

Your (sic) more mature.

I was older and better motivated.

motivated to do well to get good job

better motivation.

motivation to finish what you have started.

Use knowledge gained to pass with a good degree.

better picture real world situations; greater understanding of theory of subject

practical knowledge of organization.

working with professionals gives push to achieve more; better see value of a degree.

matured. Had an insight into working practices.

During placement you do things to best ability always. Setting high personal standards.

you can relate theoretical to practical.

computer skills, internet skills, essay/report skills improved.

more motivated to get best degree possible to move into chosen area of work.

push you toward getting university finished.

increased understanding of theories through implementation in organisations.

Ability to provide real life examples to support theory in courses.

Q15.1 LITERALS: Can you think of any reason why Work Placement might lead to reduced academic performance on return to undergraduate studies?

Yes

No

If yes please explain

bad experiences

if bad placement experience

mine was not very demanding

if not related to studies. demotivated towards studies.

if unrelated

makes you keener to get a job quicker.

some placements could be shambles. Mine's was not.

If it was a very poor job

it had no real connection to course and subjects.

placement unrelated to studies prior to placement.

it is very difficult to get back into studying after having a year out.

easy to become used to higher income leading to lower motivation to return.

year away from study. A lot of facts forgotten.

out of study habit; forgetting theory after a year.

it's hard to get back into studying after a year's break.

returning to study with no financial income.

coming back after an enjoyable year to uni means less enjoyment of uni; too much spare time.

difficult to motivate yourself after 15 months; realised degree does not match career aspirations.

used to financial element and way of life so difficult to adjust to uni; some theory does not fit.

END OF LITERALS IN STUDENT SURVEY:

Abbreviated version of returns from survey:

An abbreviated account is given below.

Institution promotion of internship: 74% of respondents considered that internship was promoted either *strongly* or *very strongly*.

Suggested main benefits of internship: practical experience (100%) and personal development (84%) were followed by financial and academic benefits (mentioned in 58%) of returns.

Perception of internship to have been related to academic studies prior to placement: strongly related (19.4%); moderately related (58.1%); unrelated (22.6%).

Perception of internship to have been related to academic studies on return to studies: strongly related (9.7%); moderately related (51.6%); unrelated (38.7%).

Expectation of internship having positive/negative/neutral impact on academic performance: positive (77.4%); neutral (12.9%); negative (9.7%).

Expectation of internship resulting in a different academic performance in Finals: same (32.3%); enhanced (51.6%); reduced (16.1%).

Motivation to study on return from internship: highly motivated (41.9%); moderately motivated (32.3%); poorly motivated (25.8%).

(Source: fieldwork)

Appendix 13: Cornford's (1991) *Sequential Skill Practice Model* (adapted from Cornford 2002)

Context within thesis: Chapter 6, Transfer of learning. One of the main arguments which emerges from this thesis is that even where the general conditions for transfer of learning might appear to be favourable – say where *near transfer* is sought – there might still be a cognitive impediment to transfer. In the case where *far transfer* is sought – and this might best describe the type of transfer of learning that would be involved were the experimental

cohorts in this investigation exhibit indications of enhanced academic performance post-placement – the difficulties of transfer are compounded even when elaborate steps are taken to elicit positive transfer, such as by reconfiguring the architecture of placement. The nature of the cognitive impediment, according to Cornford's analysis, is the failure to train for transfer of learning. Cornford's Sequential Skill Practice Model is an early attempt to lay bare the basic steps necessary for any training for transfer. Two points should be noted about the model: firstly it was envisaged for the promotion of positive transfer from the vocational education domain (schools, FE colleges, training workshops etc) to the workplace; secondly, it is primarily aimed at the micro-level of teaching practice. In both these respects it might appear that the model is likely to offer little by way of insight to the problem of transfer of learning from the workplace to the academic domain. This researcher is of the opinion that if placement is to consistently enhance academic performance upon to return to studies, and thus justify some of the claims that have been made in its promotion within the HE sector, any scholarship which sheds light on the principles of transfer of learning and which at the same time cogently makes the case for training for transfer while explaining how this might be undertaken, is worth consideration. It is also the opinion of this researcher that Cornford's model awaits adaptation for the cases considered in this thesis. The version presented below has been edited by the candidate from Cornford's (2002) recapitulation of his model.

Cornford's (1991) Sequential Skill Practice Model – an edited version

Strategies for Fostering More Effective Learning

Three distinct stages involved in learning for transfer.

- i. Acquisition of the basic skill.
- ii. Development of generalised application.
- iii. Transfer of the generalised skill to a setting different from that in which the initial training takes place.

Each of the three stages involves two distinct phases:

- i. Effective acquisition and storage of information in memory;
- ii. Development of skill proficiency.

The first phase is essentially an acquisition phase and the second involves consolidation of initial learning through practice and feedback via skill learning processes (Cornford, 1996). From a teaching/training perspective, there is always a need to determine whether a learner has acquired the basic skill and understanding of underlying principles before additional, more complex activities

involving generalisation and transfer are undertaken. This should involve judgement of actual performance. Just having individuals write answers or describe the task is no guarantee that the individual can perform effectively.

Some Limitations of the Model

Not every occupational skill or knowledge area is suited to such an intensive practice-feedback-assessment schedule. The time and effort in training indicated as required to develop transferability indicates that only important skills should be selected as a focus in this transfer development process. Clearly, there may be more minor sets of skills and knowledge in every occupational specialty, which teachers would like to ensure do transfer, but there are of course practical limitations and pressures on training time in vocational education with large bodies of knowledge to be acquired in most occupational specialisations. There are considerable demands made on a teacher's ability to select an appropriate set of skills, engage in task analysis, carefully plan initial teaching incorporating appropriate cognitive and metacognitive strategies, and develop a sequenced practice programme with suitable task requirements and assessment. The teacher selecting this approach needs to have a good knowledge of the most important sets of occupational skills and also of work experiences of novices where the transfer of the underlying principles generally proves most difficult. Yet the time and effort required are likely to be more than rewarded with the development of in-depth understanding by trainees involved in such a practice programme and the development of their self-management skills. The teaching of Meichenbaum's self-instruction strategy is relatively simple and not time consuming (see Cornford, 1991). The teaching of use and development of mnemonics takes somewhat more time, but once the skills have been taught, then students can continue to apply them to the learning of factual material throughout their lives. Initially, teachers may need to prompt students to continue to use these cognitive and metacognitive learning strategies. However, once students can experience the benefits from using them, and thus come to see their value and potential for application, genuinely lifelong learning skills will be established.

Appendix 14 European Framework for Work Experience



EUROPEAN FRAME FOR WORK EXPERIENCE

This Leonardo funded project aims to develop a **European standard for the assessment and accreditation of employability skills** developed through work experience/placements whilst studying. It is co-ordinated by the Careers Research and Advisory Centre (CRAC) based in Cambridge, with partners from across the UK, Germany, Finland, Belgium, Spain and Romania.

EFWE aims to target:

- All those post-16 students who undertake paid/unpaid work experience whilst studying
- Employer organisations, including SMEs
- Careers Services and educational charities which help students in finding placements
- Universities and Further Education organisations who are doing research in this area

EFWE will help to establish work experience as a basis to develop key skills and student employability, helping students to **reflect on their work experience and to translate the skills they gain into sellable attributes**. As a result they will be able to evidence their employability skills to future employers.

The project started in December 2002 and it has become clear from the work that has been done to date, including research undertaken in each of the partner countries into existing work experience systems and initiatives and the purposes to which the work experience is used, there are common issues across European countries. With an increase in mobility across Europe, if not across the globe, the outcomes of this project should enable a basic standard to be set that will be recognised by employers.

Further details can be had from: sherry.abuel-ealeh@crac.org.uk

SME 'PLACEMENT TOOLKIT'

Many SMEs see the benefit of taking a student on work experience but are unsure how to go about it or indeed what their options are. Others assume taking a student on work experience is too time-consuming and is of little benefit to their business. The toolkit will aim to overcome these issues.

The toolkit materials will be designed in such a way to make them user-friendly and to minimise the amount of time required by the employer to provide a quality experience. The toolkit will also be relevant to the student and be useful to the work being undertaken.

The overall objective is to produce a practical tool enabling both the employer and the student to make the most of the work experience/placement opportunity. As a consequence there is a business benefit to the employer and a practical and relevant work-related learning opportunity for the student enabling them to develop skills required for the world of work.

The project is being undertaken by the Centre for Career Development at the University of Nottingham and the National Council for Work Experience (NCWE). Berni Dickinson, a freelance consultant with experience working with SMEs on recruitment and development of graduates in the workplace is carrying out the work. Early indications from discussions with a wide range of parties in the East Midlands region indicate that this development is timely and will assist the University in making positive links with SMEs in their locality.

It is intended that the 'toolkit' will be available by the autumn, 2004.

Further information can be had from either Sarah Gibbons, Centre for Career Development, the University of Nottingham: sarah.gibbons@nottingham.ac.uk, or Liz Rhodes, Director, NCWE: l.rhodes@prospects.ac.uk.

References / Bibliography

Note on presentation of references/bibliography – main features

- i. Only works / sources cited in the thesis are listed here.
- ii. As well as a compendium listing of all sources cited, this has been disaggregated to show separately books, journal articles, research papers including conference papers, government and other institutional publications, and web-published sources.

All References List

- Aiello, J R and Kolb, K J (1995), Electronic performance monitoring and social context: Impact on productivity and stress. *Journal of Applied Psychology*, **80**, 339-353
- Annett, J. (1991) Skill Acquisition. In J E Morrison, (ed) *Training for Performance*, John Wiley and Sons, 1991
- Ashcroft, K and Foreman-Peck, L, (1994), *Managing Teaching and Learning in Further and Higher Education*, Falmer Press
- Association for Sandwich Education and Training (ASET), (1999)
<http://www.asetonline.org/> accessed 14 July 2004
- Au Yeung, Y N, Lai, C, C, Ho, W F, Sivan, A, Gow, L and Ledesma, J, (1993), Attitudes towards Industrial Training in the BEng Course in Building Services Engineering at Hong Kong Polytechnic, *Studies in Higher Education*, **18** (2)
- Avakian, A, (1974) Writing a learning contract, *Current Issues in Higher Education* **29**, 50-56)
- Bailey, D, (2004) The contribution of work-based supervision to interprofessional learning on a masters programme in Community Mental Health, *Active Learning in Higher Education*, **5** (3) 263-278
- Baldwin, J M (1896). A new factor in evolution, *American Naturalist*, **30**, 441-451.
- Barrick M R, Mount M K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, **44**, 1-26.
- Barthorpe, S and Hall, M, (2000) A Collaborative Approach to Placement Preparation and Career Planning for University Students: a case study. *Journal of Vocational Education and Training*, **52**, (2) 165-175.
- Bartlett, F C. (1958) *Thinking: an experimental and social study*, Allen and Unwin,

- Baumeister, R F and Leary, M R (1995) The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, **117**(3), 497-529
- Becker, H, Geer, B, and Strauss, A (1961) *Boys in White: Students Culture in Medical School*. Chicago: University of Chicago Press.
- Benett, Y, (1989). The assessment of supervised work experience (SWE): a theoretical perspective. *Vocational Aspect of Education*. **41**, (109), 53-64.
- Benson, A and Blackman, D, (2003) Can Research Methods Ever Be Interesting? *Active Learning in Higher Education*, **4** (1) 39-55
- Bernstein, D A, Clarke-Stewart, A, Roy, E J and Wickens, C D, *Psychology*, 4th Edition, (1997) Boston, Houghton Mifflin,
- Billett, S (1998) Transfer and Social Practice, *Australian and New Zealand Journal of Vocational Education Research*, **6**(1), 1-25.
- Birdwell, J, 1972, Behavioral Contracts in Reading and Study, *Reading Improvement*, **8**, 92-94
- Blunkett, David, (Rt Hon, HM Education and Employment Secretary) Speech given at University of Greenwich, 15 February 2000
- Boud, D, Solomon, N, and Symes, C (Eds) (2001) *Work-based learning: A new higher education?* The Society for Research into Higher Education with the Open University Press.
- Bourner, T and Ellerker, M (1993) Sandwich placements: improving the learning experience: part 1, *Education and Training*, **35** (7) 3-7.
- Bowes, L and Harvey, L (1999), *The Impact of Sandwich Education on the Activities of Graduates Six Months Post Graduation*, Centre for Research into Quality, University of Central England in Birmingham, Birmingham
- Bowers-Brown, Tamsin, and Harvey, Lee, (2004), Are there too many graduates in the UK? A literature review and an analysis of graduate employability, *Industry and Higher Education* (18), 4, 243-254
- Boyd, E, Knox , H & Struthers, J (2003) Work-based learning, theory and practice: a case study of Scottish SMEs, *Industry and Higher Education*, June, 163-178
- Boys, C, Brennan, J, Henkel, M, Kirkland, J, Kogan, M and Youll, P (1988) *Higher Education and the Preparation for Work*. London: Jessica Kingsley

- Brennan, John. (1987) *CNAA graduates : their employment and their experience after leaving college*. - London : CNAA (CNAA Development Services Publication 13)
- Brennan, J (2004), *Things we know and don't know about graduate employment*, Employability Advisory Group, Seminar on 9 December 2004, Centre for Higher Education Research and Information, Open University.
- Brennan, J and Little, B (1996), *A Review of Work Based Learning in Higher Education*, Quality Support Centre, London, DfEE.
- British Journal of Work Experience and Work Based Learning, *Work Experience for undergraduates: A Comprehensive Guide*, NCWE
- Broadbent, D (1987), Structures and strategies: where are we now? *Psychological Research*, 49, 73-79
- Brown, G and Atkins, M (1988), *Effective Teaching in Higher Education*, London, Methuen
- Burke, V, Jones, I and Doherty, D, (2005) Analysing student perceptions of transferable skills via undergraduate degree programmes *Active Learning in Higher Education*, 6 (2) 132-144
- Busby, G (2003) Tourism Degree Internships: a longitudinal study. *Journal of Vocational Education and Training* 55 (3) 319 - 334
- Chiang, Linda H (1998) *Enhancing Metacognitive Skills through Learning Contracts*. Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (Chicago, IL, October 14-17, 1998)
- Cohen, L, and Manion, L, (1994, 1997), *Research Methods in Education*, Fourth Edition, Routledge, London
- Committee of Vice-Chancellors and Principals (1998) *Skills Development in Higher Education*, London, CVCP.
- Committee of Vice-Chancellors and Principals (1999) *CVCP calls on employers to boost work experience*, London, CVCP
- Cook, S H, (1999) The self in self-awareness, *Journal of Advanced Nursing*, 29
- Cornford, I R (1991) Microteaching Skill Generalization and Transfer: training preservice teachers in introductory lesson skills, *Teaching and Teacher Education*, 7, 25-56.
- Cornford, Ian, R (2002) Two Models for Promoting Transfer: a comparison and critical analysis. *Journal of Vocational Education and Training*, 54, (1), 85-102

- Cornford, I R and Beven, F A (1999) Workplace Learning: differential learning needs of novice and more experienced workers, *Australian and New Zealand Journal of Vocational Education Research*, 7 (2) 25-54.
- Cosmides, Leda and Tooby, John (1997) *Evolutionary Psychology: A Primer*, Center for Evolutionary Psychology, University of California, Santa Barbara, <http://www.psych.ucsb.edu/research/cep/primer.html>, accessed 14 May 2003.
- Costa, P T, and McCrae, R (1992) *Revised NEO Personality Inventory: NEO PI and NEO Five-Factor Inventory*, Odessa, FL.: Psychological Assessment Resources, Inc.
- Cox, B (1997) The Rediscovery of the Active Learner in Adaptive Contexts: a developmental-historical analysis of the transfer of training, *Educational Psychologist*, 32, 41-55.
- Craik, F I M and Lockhart, R S (1972) CHARM is not enough: Comments on Eich's model of cued recall. *Psychological Review*, 93, 360-364
- Craik, F I M. and Tulving, E (1975) Depth of processing and the retention of words of episodic memory. *Journal of Experimental Psychology: General*, 104, 268-294
- Crick Report (1964) National Advisory Council on Education for Industry and Commerce, *A Higher Award in Business Studies*, HMSO
- Critical Thinking – Policy Works – Scottish Foundation Council, 2003, *Higher Education: Higher Ambitions? Graduate employability in Scotland*
- Daniel, W W and Pugh, H (1975) *Sandwich Courses in Higher Education*, PEP Report on CNAA Degrees in Business Studies, Volume XLI Broadsheet No 557, September.
- Danks, D J and King, I W (1986) The assessment of supervised work experience, *Business Education*, 7 (2) 22-28.
- Daresh, J C (1990) Learning by doing: research on the Educational Administration Placement, *Journal of Educational Administration*, 28 (2) 34-47.
- Dearing Review (1997) The National Committee of Inquiry into Higher Education: Higher Education for the 21st Century, London, HMSO.
- Detterman, D K (1993). The case for the prosecution: Transfer as an epiphenomenon, in D K Detterman and R J Sternberg (Eds), *Transfer on trial: Intelligence, cognition and instruction* (1-24). Norwood, NJ: Ablex.

- Doane, S M, Sohn, Y W, Alderton, D L and Pellegrino, J W (1996) Acquisition and transfer of skilled performance: Are visual discrimination skills stimulus-specific? *Journal of Experimental Psychology: Human Perception and Performance*, **22**, 1218-1248.
- Druckman, D, and Bjork, R A. (Eds) (1991), *In the mind's eye: Enhancing human performance*. Washington DC: National Academy Press
- Duignan, J, Lush, D, and Gomez, S (2004). *Undergraduate work placement and academic performance: now you see it, now you don't. A comparative study of biosciences and business placement programmes at two separate universities*. Paper delivered at ASET Conference, 7 – 9 September, Fitzwilliam College, Cambridge
- Ellis, H C, Thomas, R L, and Rodriguez, I A (1984), Emotional mood states and memory: elaborative encoding, semantic processing, and cognitive effort. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, **10**, 470-482
- Entwistle, N (ed) (1985) *New Directions in Educational Psychology*, the Falmer Press, London
- Entwistle, N (1997) *Contrasting Perspectives on Learning*, in F Marton, D J Hounsell and N J Entwistle (Eds) *The experience of learning* (2nd ed.) (145– 158). Edinburgh: Scottish Academic Press.
- Entwistle, Noel and Smith, Colin (2002) Personal understanding and target understanding: Mapping influences on the outcomes of learning. *British Journal of Educational Psychology* **72**, 321–342
- Eraut, M (1994) *Developing Professional Knowledge and Competence*, London, Falmer Press
- Eraut, Michael (2000) Non-formal learning and tacit knowledge in professional work *British Journal of Educational Psychology* **70**, (1)113–136
- Felder, R M and Rebecca Brent, R (1996) Navigating the Bumpy Road to Student-Centered Instruction *College Teaching*, **44**, 43-47
- Ferrari, Michel (1999) Influence of Expertise on the Intentional Transfer of Motor Skill. *Journal of Motor Behavior*, **31**, (1) 79-.86
- Fransson, A (1977) On qualitative differences in learning: effects of motivation and test anxiety on process and outcome. *British Journal of Educational Psychology*, **47**, 244–57.
- Gage, N L (ed) (1963) *Handbook of Research on Teaching*, Rand McNally, Chicago.

- Gage, N and Berliner, D (1992) *Educational Psychology*. Boston: Houghton Mifflin.
- Gagné, R M and Briggs, L J and Wager, W W (1988) *Principles of Instructional Design* New York: Holt, Rinehart and Winston
- Gagné, R M (1985) *The Conditions of Learning and the Theory of Instruction*, New York: CBS College Publishing,
- Gibbons, M, Limoges, C, Nowotny, H., Schwartzman, S, Scott, P, and Trow, M (1994) *The new production of Knowledge: The dynamics of science and research in contemporary societies*. London, Sage.
- Gibbs, P T (2000) Isn't Higher Education Employability? *Journal of Vocational Education and Training*, 52, (4), 559-571
- Gick, M L and Holyoak, K J (1987). The cognitive basis of knowledge transfer, in S M Cormier and J D Hagman, (Eds) *Transfer of learning: Contemporary research and applications* (9-46). San Diego: Academic Press.
- Glaser, R (1990) The emergence of learning theory within instructional research, *American Psychologist*, 45, 29-39
- Gott, S P (1990) The assisted learning of strategic skills, in N Frederiksen, R Glaser, A Lesgold, and M G Shafto, (Eds), *Diagnostic monitoring of skill and knowledge acquisition* (173-189) Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Greene, J and D'Oliveira, M (1996) *Learning to use statistical tests in psychology*, Open University Press,
- Hadis, Benjamin F (2005) Gauging the impact of study abroad: how to overcome the limitations of a single-cell design *Assessment & Evaluation in Higher Education* 30 (1) 3-19
- Haddock, T T (1967) Individualized Instruction through Student Contracts, *Arizona Teacher*, 55, 10 – 11;
- Hager, Paul (2003) *Current Theories Of Workplace Learning: A Critical Assessment*, Paper presented at the 5th International Conference, JNET, University of Greenwich, London, 16-18 July, 2003
- Harris, Jimmy Carl (1994) *The Effectiveness of Student Learning Contracts in a Public Community College History Course*. Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Nashville, TN, November 9-11).

- Harvey, L, Geall, V and Moon, S (1998) *Work experience: expanding opportunities for undergraduates*, Birmingham: Centre for Research into Quality, University of Central England in Birmingham.
- Harvey, L, Locke, W, Moray A (2004) *Enhancing employability, recognising diversity: making links between education and the world of work*, Universities UK, www.UniversitiesUK.ac.uk/employability accessed 28 April 2004
- Heller, B R and Heinemann, H N (1987) The Impact of Structured and Nonstructured Work Experiences on College Students' Attitudes, Values, and Academic Performance. *Journal of Cooperative Education*; 23 (3) 19-32
- Henderson, Emma, Hogan, Helen, Grant, Andy and Berlin, Anita (2003), Conflict and coping strategies: a qualitative study of student attitudes to significant event analysis. *Medical Education*, 37 (5) 438- 447,
- Henkel, M (1988) Responsiveness of the Subjects in the Study: a theoretical perspective, in C Boys, J Brennan, M Henkel, J Kirkland, M Kogan and P Youll (Eds) *Higher Education and the Preparation for Work*. London: Jessica Kingsley
- Herold, David M., Davis, Walter, Fedor, Donald B and Parsons, Charles K (2002) Dispositional Influences On Transfer Of Learning In Multistage Training Programs. *Personnel Psychology*, 55 (4) 851-870.
- HESA, (2004), Personal communication (e-mail) in response to candidate's inquiry, dated 1 September, 2004
- Hiemstra, R. (1994). Self-directed learning. In T Husen & T N Postlethwaite (Eds.), *The International Encyclopedia of Education* (second edition), Oxford: Pergamon Press
- Higher Education Quality Council, (1996) *What are Graduates? Clarifying the Attributes of 'Graduateness'*, Discussion Paper. HEQC: Quality Enhancement Group.
- Holding, D H (1991) Transfer of training, in J E Morrison (ed) *Training for Performance*, John Wiley and Sons,
- Holyoak, K J (1991) Symbolic connectionism: Toward third-generation theories of expertise, in K A Ericsson and J Smith (Eds) *Toward a general theory of expertise: Prospects and limits* (301-335) Cambridge, England: Cambridge University Press.
- Holyoak, K J and Thagard, P (1997). The analogical mind. *American Psychologist*, 52, 35-44

- Hopper, E and Osborn, M (1975) *Adult Students: Education, Selection and Social Control*, London, Frances Pinter.
- House of Commons Education and Skills Committee (2003) *The Future Of Higher Education*, July 2003 HC425-1, 2003
- Hull, C L (1943) *Principles of behavior*, New York, Appleton-Century-Crofts
- Higher Education for the 21st Century*, (1998) London, HMSO.
- Izard, C (1993) Organizational and motivational functions of discrete emotions, in M Lewis and J M Haviland (Eds) *Handbook of emotions*, New York, Guilford
- Jackson, S (1995) Work-based learning for academic credit, *Journal of Geography in Higher Education*. **19** (2) 217-222.
- Jacobs, P A and Newstead, S E (2000), The nature and development of student motivation, *British Journal of Educational Psychology*, **70**, 243 - 254
- Jones, S and Little, B (1998), Higher Education Curricula in the UK. In *Changing relationships between Higher Education and the State*, London: Jessica Kingsley Publishers.
- Joshi, Urmi (2003) *Foundation Degrees*. Paper presented at 5th international conference, JNET, University of Greenwich, London, 16 – 18 July, 2003
- Kellogg, R T (1997) *Cognitive Psychology*, Sage
- Kimble, Gregory A (1962) Classical conditioning and the problem of awareness. *Journal of Personality*, **30** (2) 27-46
- Knight, P T and Yorke, M (2002)
<http://www.open.ac.uk/vqportal/SkillsPlus/documents/PubPaper2.pdf> accessed July, 2004
- Knight, P T and Yorke, M (2004) *Learning, Curriculum and Employability in Higher Education*. London: Routledge
- Knowles, M S (1986) *Using Learning Contracts: Practical Approaches to Individualizing and Structuring Learning*, San Francisco, CA, Jossey-Bass.
- Kolb, D (1984) *Experiential Learning*, Hemel Hempstead, Prentice-Hall.
- Kontogiannis, Tom and Shepherd, Andrew (1999), Training Conditions and Strategic Aspects of Skill Transfer in a Simulated Process Control Task. *Human-Computer Interaction*, **14** (4B) 355-94

- Kyllonen, P C and Shute, V J (1989) A taxonomy of learning skills. In Ackerman, P L, Sternberg, R J, and Glaser, R (eds.) *Learning and Individual differences: Advances in Theory and Research*, W H Freeman
- Lambert Review of Business-University Collaboration, HMSO, December 2003
- Latham, G P and Saari, L M (1979) Importance of supporting relationships in goal-setting. *Journal of Applied Psychology*, **64**, 151-156.
- Lawrence, T E (1997) *Seven Pillars of Wisdom*, Ware: Wordsworth Editions
- Levy, M, Oates, T, Hunt, M and Dobson, F (1989) *A Guide to WBL, terms: definitions and commentary on terms for WBL in vocational education and training*. FE Staff College, WBL project
- Lewin, K (1951) *Field Theory in Social Sciences*, New York, Harper Row
- Locke, E, A, Shaw, K N, Saari, L, and Latham, G P (1981) Goal setting and task performance. *Psychological Bulletin*, **90**, 125 – 152
- Lyons, B R (1996) Empirical relevance of efficient contract theory: inter-firm contracts, *Oxford Review of Economic Policy*, **12** :27-52
- Macmillan, J and Mclean, M, J, (2005) Making first-year tutorials count: Operationalizing the assessment-learning connection, *Active Learning in Higher Education*, **6** (2) 94–105
- Mager, R F (1962) *Preparing Instructional Objectives*, Palo Alto, Fearon.
- Marton, F and Säljö, R (1984) Approaches to learning, in F Marton, D J Hounsell and N J Entwistle (Eds) *The Experience of Learning*, Edinburgh, Scottish Academic Press
- Marshall, S L A (1947) *Men against fire*, New York, Morrow
- Marshall, I S (1993) *Contract Learning in Sandwich Placement*. Edinburgh: Napier University
- Marshall, I S and Cooper, L S M (2001) Earning Academic Credit for Part-time Work. In Boud, D and Solomon, N (Eds) *Work-based learning: A new higher education?*
- McClelland, D C (1985) *Human motivation*, Glenview
- Meyers, C and Jones, T B (1993) *Promoting Active Learning: Strategies for the College Classroom*. San Francisco: Jossey-Bass
- Miller, R B (1967) Task taxonomy: Science or technology, *Ergonomics*, **10**, 167-176
- Miller, S (1996) *Experimental Design and Statistics*, 2nd edition, Routledge, London.

- Miller, C M L and Parlett, M (1974), *Up to the mark: a study of the examination game*. London, SRHE,
- Morgan, A, Jones, N and Fitzgibbon, K (2003) *Critical reflections on the development of a Foundation degree*, paper presented at 5th international conference, JNET, University of Greenwich, London, 16 –18 July, 2003
- Morrison, J E (ed) (1991) *Training for Performance*, J Wiley, Chichester
- Murray, H A (1938), *Explorations in personality*, OUP
- National Council for Work Experience (2000) *The placement tutor's handbook*, London, DfEE.
- National Council for Work Experience, Work Experience for undergraduates: A Comprehensive Guide, (undated, no author given) *British Journal of Work Experience and Work Based Learning*, Retrieved from <http://www.prospects.ac.uk/workexperience/index.htm>(www.work-experience.org, accessed 16 February 2003.
- Opper, S, Teichler, U & Carlson, J (1990) *Impacts of study abroad programmes on students and graduates*, London, Jessica Kingsley.
- Osborne, M, Yule, B, Carmichael M and Dockerell, R (1993) *Accreditation of in-house courses and Accreditation of prior experiential learning – some case studies*. Scottish Higher Education Employers Collaboration Joint Research and Development project, University of Stirling and Glasgow Caledonian University.
- Parilla, P F and Hesser, G W (1998) Internships and the sociological perspective: Applying principles of experiential learning, *Teaching Sociology*, 26, (4) 310-329.
- Patrick, J (1991) Types of analysis for training, in J E Morrison, (ed) *Training for Performance*, J Wiley, Chichester
- Pavlov, I P (1927), *Conditioned Reflexes*, London, OUP
- Pea, R D (1987) Socializing the Knowledge Transfer Problem, *International Journal of Educational Research*, 11, 639-659.
- Pedler, M, Burgoyne, J and Brook, C, (2005) What has action learning learned to become? *Action Learning: Research and Practice*, 2 (1) 49-68
- Penner, L A and Craiger, J P (1992) The weakest link: The performance of individual group

members, in R W Swezey and E Salas (Eds) *Teams: their training and performance*.

Norwood, Ablex

Pennington, N, Nicolich, R and Rahm, J (1995) Transfer of training between cognitive subskills: Is knowledge use specific? *Cognitive Psychology*, **28**, 175-224.

Perkins, D N and Salomon, G (1989) Are Cognitive Skills Context Bound? *Educational Researcher*, **18** (1) 16-25.

Piaget, J (1970) Piaget's theory, in P H Mussen (ed), *Manual of child psychology* (703-732). London: Wiley

Pinker, S (1997) *How The Mind Works*, London, Penguin.

Pinker, S (2002) *The Blank Slate*, London, Penguin.

Polczynski, James J, and Shirland, I E (1977) Expectancy Theory and Contract Grading Combined as an Effective Motivational Force for College Students. *Journal of Educational Research*; **70** (5) 238-241

Policy Works / Scottish Foundation Council, (2003) *Higher Education: Higher Ambitions? Graduate employability in Scotland*

Race, P, How Does Learning Happen Best? *Deliberations*

<http://www.lgu.ac.uk/deliberations/eff.learning/happen.html>, accessed 12 July 2003

Ramsden, P (1992) The Context of Learning in Academic Departments, in F Marton, D J Hounsell and N J Entwistle (Eds) *Effects of the Learning Context in Historical Perspective*

Reber, A S, (1995) *Dictionary of Psychology*, 2nd edition, Penguin, Universities Press

Richards, Boyd (1984) *Availability of Prior Knowledge and Its Effect on Transfer of Learning*. Paper presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, January 20-24, 1984).

Rigney, J W (1978) Learning strategies: A theoretical perspective, in H F O'Neill (ed) *Learning Strategies*, Academic Press

Robinson, G, (2005) Action learning: developing critical competencies for knowledge era workers, *Action Learning: Research and Practice*, **2** (1) 79-88

Rogers, C (1983) *Freedom to Learn for the '80s*, Columbus, OH, Charles E. Merrill.

Rosen, R (1991) *The Healthy Company*, LA, J P Tarcher.

Rousseau, D M (1995) *Psychological Contracts in Organizations*, London, Sage.

- Rozin P and Shenker, J (1989) Liking oral cold and hot irritant sensations: Specificity to type of irritant and locus of stimulation. *Chemical Senses* **14** (6) 771-779
- Ryan, G, Toohey, S and Hughes, C (1996) The purpose, value and structure of the placement in higher education: a literature review, *Higher Education*, **31** (3) 355-377.
- Säljö, R (1984) Learning from reading, in F Marton, D J Hounsell and N J Entwistle (Eds) *The Experience of Learning*, Edinburgh, Scottish Academic Press
- Salomon, G and Perkins, D N (1987) Transfer of cognitive skills from programming: When and How? *Journal of Educational Computing Research* **3**, 149 –169.
- Salomon, G and Perkins, D N (1989) Rocky roads to transfer: Rethinking mechanisms of a neglected phenomenon, *Educational Psychologist* **24**, 113-142.
- Schmidt, R A and Bjork, R A (1992). New conceptualizations of practice: Common principles in three paradigms suggest new concepts for training. *Psychological Science*, **3**, 207-217.
- Schmidt, R A and Lee, T D (1999) *Motor Control and Learning: A Behavioral Emphasis*, 3rd edn, Champaign: Human Kinetics.
- Schultz, D P and Schultz, S E (1987) *A History of Modern Psychology*. Harcourt Brace Jovanovich Publications.
- Scott, P (1995) *The Meanings of Mass Higher Education*, Buckingham: SRHE/OU Press
- Shanteau, J and Harrison, P (1991) The perceived strength of an implied contract: Can it withstand financial temptation? *Organizational Behavior and Human Decision Processes*, **49**, 1-21
- Shiffrin, R, and Schneider, W (1977) Controlled and automatic human information processing: Perceptual learning, automatic attending, and a general theory. *Psychological Review*, **84**, 127-190
- Silver, H and Brennan, J (1988) *A Liberal Vocationalism*, London, Methuen
- Simon, H A (1976) *Administrative behavior*. New York: Macmillan.
- Sims, H P and Gioia, D A (1986) *The thinking organization*. San Francisco, Jossey-Bass
- Singley, M K and Anderson, J R (1989) *The transfer of cognitive skill*. London: Harvard University Press.
- Skinner, B F (1938) *The Behaviour of Organisms*, Appleton-Century-Crofts
- Skinner, B F (1950) Are theories of learning necessary? *Psychology Review*, **57**, 193-216

- Skinner, B F (1954) the science of learning and the art of teaching, *Harvard Educational Review*, **24**, 88-97
- Skinner, B F (1969) *Contingencies of reinforcement: A theoretical analysis*. New York, Appleton-Century-Crofts
- Snyder, B R (1971) *The hidden curriculum*. New York, Knopf.
- Sternberg, R (1998) Metacognition, Abilities and Developing Expertise: What makes an expert student? *Instructional Science*, **26**, 127-140
- Stokes, T F and Baer, D (1977) The Implicit Technology of Generalization, *Journal of Applied Behavior Analysis*, **10**, 349-367.
- Taylor, A, Sluckin, W, Davies, D R, Reason, J T, Thomson, R and Colman, A M (1982) *Introducing Psychology*, 2nd Edition, Penguin.
- Taylor, E (1983) *Orientations to study: A longitudinal interview investigation of students in two human studies degree courses at Surrey University*, unpublished PhD thesis, Guildford, University of Surrey.
- Teichler, Ulrich, (2004) Temporary Study Abroad: the life of ERASMUS students, *European Journal of Education*, **39** (4) 396-408
- The Government's Response to *Higher Education in the Learning Society* (1998) *The Report of the National Committee of Inquiry into Higher Education, chaired by Sir Ron (now Lord) Dearing*, London, HMSO.
- Thorndike, E L (1932) *The Fundamentals of Learning*. Teachers College Bureau of Publications
- Tinbergen, N (1989) *The study of instinct*, Oxford, Clarendon
- Turney, C (1988) The Practicum Curriculum. *Journal of Teaching Practice*, **8** (1) 3-14
- Vroom, V (1964) *Work and motivation*. New York, Wiley.
- Watson, J B (1914) *Behavior: An Introduction to Comparative Psychology*, Holt
- Watson, J B (1924) *Behaviorism*, New Brunswick, NJ, Transaction
- Watson, J B (1930) *Behaviorism*, University of Chicago Press, 2nd edition
- Weigelt, C, Williams, A M, Wingrove, T and Scott, M A (2000) Transfer and motor skill learning in association football. *Ergonomics*, **43** (10) 1698 –1708.
- Weil, S W and McGill, I (Eds) (1989) *Making Sense of Experiential Learning*, the Society for Research into Higher Education and Open University Press,

- Weiner, B (1993) On sin versus sickness: A theory of perceived responsibility and social motivation. *American Psychologist*, 48 (9) 957-965
- Wickens, D D (1972) Characteristics of word encoding, in A W Melton and E Martin (Eds) *Coding processes in human memory*, New York, Winston.
- Woodsworth, R S, and Schlosberg, H (1954) *Experimental Psychology*, Holt
- Yelon, S (1992) M.A.S.S.: a model for producing transfer, *Performance Improvement Quarterly*, 5 (2) 13-23.
- Zuckerman, M (1984) Sensation seeking: A comparative approach to a human approach. *The Behavioural and Brain Sciences*, 7, 413-471

Books cited in *all references* list

- Annett, J (1991) Skill Acquisition. In J E Morrison, (ed) *Training for Performance*, John Wiley and Sons, 1991
- Ashcroft, K and Foreman-Peck, L (1994) *Managing Teaching and Learning in Further and Higher Education*, Falmer Press
- Bartlett, F C (1958) *Thinking: an experimental and social study*, Allen and Unwin,
- Becker, H, Geer, B, and Strauss, A (1961) *Boys in White: Students Culture in Medical School*. Chicago: University of Chicago Press.
- Bernstein, D A, Clarke-Stewart, A, Roy, E J and Wickens, C D, *Psychology*, 4th Edition, 1997 Houghton Mifflin
- Boys, C, Brennan, J, Henkel, M, Kirkland, J, Kogan, M and Youll, P (1988) *Higher Education and the Preparation for Work*. London: Jessica Kingsley
- Brown, G. and Atkins, M. (1988), *Effective Teaching in Higher Education*, London, Methuen
- Cohen, L, and Manion, L, (1994, 1997), *Research Methods in Education*, Fourth Edition, Routledge, London
- Detterman, D K (1993). The case for the prosecution: Transfer as an epiphenomenon, in D K Detterman and R J Sternberg, (Eds), *Transfer on trial: Intelligence, cognition and instruction* (1-24). Norwood, NJ: Ablex.
- Druckman, D, and Bjork, R A (Eds) (1991), *In the mind's eye: Enhancing human performance*. Washington DC: National Academy Press

- Entwistle, N (ed) 1985, *New Directions in Educational Psychology*, the Falmer Press, London
- Entwistle, N (1997) *Contrasting Perspectives on Learning*, in F Marton, D J Hounsell and N J Entwistle (Eds) *The experience of learning* (2nd ed.) (145– 158). Edinburgh: Scottish Academic Press.
- Eraut, M (1994) *Developing Professional Knowledge and Competence*, London, Falmer Press
- Gage, N L (ed) (1963) *Handbook of Research on Teaching*, Rand McNally, Chicago.
- Gage, N and Berliner, D (1992) *Educational Psychology*. Boston: Houghton Mifflin.
- Gagné, R M and Briggs, L J and Wager, W W, *Principles of Instructional Design*, (1988) New York: Holt, Rinehart and Winston
- Gagné, R M (1985) *The Conditions of Learning and the Theory of Instruction*, New York: CBS College Publishing
- Gibbons, M, Limoges, C, Nowotny, H., Schwartzman, S, Scott, P, and Trow, M (1994), *The new production of Knowledge: The dynamics of science and research in contemporary societies*. London, Sage.
- Gick, M L and Holyoak, K J (1987). The cognitive basis of knowledge transfer, in S M Cormier and J D Hagman, (Eds), *Transfer of learning: Contemporary research and applications* (9-46). San Diego: Academic Press.
- Gott, S P (1990) The assisted learning of strategic skills, in N Frederiksen, R Glaser, A Lesgold, and M G Shafto (Eds), *Diagnostic monitoring of skill and knowledge acquisition* (173-189). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Greene, J and D'Oliveira, M (1996) *Learning to use statistical tests in psychology*, Open University Press,
- Henkel, M (1988) Responsiveness of the Subjects in the Study: a theoretical perspective, in C Boys, J Brennan, M Henkel, J Kirkland, M Kogan and P Youll, *Higher Education and the Preparation for Work*. London: Jessica Kingsley
- Hiemstra, R. (1994). Self-directed learning. In T. Husen & T. N. Postlethwaite (Eds.), *The International Encyclopedia of Education* (second edition), Oxford: Pergamon Press
- Holding, D H (1991) Transfer of training, in J E Morrison, (ed) *Training for Performance*, John Wiley and Sons,

- Holyoak, K J (1991). Symbolic connectionism: Toward third-generation theories of expertise, in K A Ericsson and J Smith (Eds), *Toward a general theory of expertise: Prospects and limits* (301-335). Cambridge, England: Cambridge University Press.
- Hopper, E and Osborn, M (1975) *Adult Students: Education, Selection and Social Control*, London, Frances Pinter.
- Hull, C L (1943) *Principles of behavior*, New York, Appleton-Century-Crofts
- Izard, C (1993) Organizational and motivational functions of discrete emotions, in M Lewis and J M Haviland (Eds) *Handbook of emotions*, New York, Guilford
- Kellogg, R T (1997) *Cognitive Psychology*, Sage
- Knight, P T and Yorke, M (2004) *Learning, Curriculum and Employability in Higher Education*. London: Routledge
- Knowles, M S (1986) *Using Learning Contracts: Practical Approaches to Individualizing and Structuring Learning*, San Francisco, CA, Jossey-Bass.
- Kolb, D (1984) *Experiential Learning*, Hemel Hempstead, Prentice-Hall.
- Kyllonen, P C and Shute, V J (1989) A taxonomy of learning skills. In Ackerman, P L, Sternberg, R J, and Glaser, R, (eds.) *Learning and Individual differences: Advances in Theory and Research*, W H Freeman,
- Lawrence, T E, (1935, 1997) *Seven Pillars of Wisdom* Ware: Wordsworth Editions
- Lewin, K (1951) *Field Theory in Social Sciences*, New York, Harper Row
- Mager, R F (1962) *Preparing Instructional Objectives*, Palo Alto, Fearon.
- Marton, F and Säljö, R (1984) Approaches to learning, in F Marton, D J Hounsell and N J Entwistle (Eds) *The Experience of Learning*, Edinburgh, Scottish Academic Press
- Marshall, S L A (1947) *Men against fire*, New York, Morrow
- Marshall, I. S (1993) *Contract Learning in Sandwich Placement*. Edinburgh: Napier University.
- Marshall, I. S and Cooper, L S M (2001) Earning Academic Credit for Part-time Work. In Boud, D and Solomon, N (Eds.) (2001) *Work-based learning: A new higher education?*
- McClelland, D C (1985), *Human motivation*, Glenview
- Meyers, C and Jones, T B (1993) *Promoting Active Learning: Strategies for the College Classroom*. San Francisco: Jossey-Bass
- Miller, S, (1996) *Experimental Design and Statistics*, 2nd edition, Routledge, London.

- Miller, C M L and Parlett, M, (1974) *Up to the mark: a study of the examination game*. London, SRHE,
- Morrison, J E (ed) (1991) *Training for Performance*, J Wiley, Chichester
- Murray, H A (1938) *Explorations in personality*, OUP
- Opper, S, Teichler, U & Carlson, J (1990) *Impacts of study abroad programmes on students and graduates*, London, Jessica Kingsley
- Patrick, J (1991) Types of analysis for training, in J E Morrison, (ed) *Training for Performance*, J Wiley, Chichester
- Pavlov, I P (1927) *Conditioned Reflexes*, London, OUP
- Penner, L A and Craiger, J P (1992) The weakest link: The performance of individual group members, in R W Swezey and E Salas (Eds) *Teams: their training and performance*. Norwood, Ablex
- Piaget, J (1970) Piaget's theory, in P H Mussen (ed) *Manual of child psychology* (703-732). London: Wiley.
- Pinker, S (1997) *How The Mind Works*, London, Penguin.
- Pinker, S (2002) *The Blank Slate*, London, Penguin.
- Ramsden, P (1992) The Context of Learning in Academic Departments, in F Marton, D J Hounsell and N J Entwistle (Eds) *Effects of the Learning Context in Historical Perspective*
- Reber, A S (1995) *Dictionary of Psychology*, 2nd edition, Penguin, Universities Press
- Rigney, J W (1978) Learning strategies: A theoretical perspective, in H F O'Neill, (ed) *Learning Strategies*, Academic Press
- Rogers, C (1983) *Freedom to Learn for the '80s*, Columbus, OH, Charles E. Merrill.
- Rosen, R (1991) *The Healthy Company*, LA, J. P. Tarcher.
- Rousseau, D M (1995) *Psychological Contracts in Organizations*, London, Sage.
- Säljö, R (1984) Learning from reading, in F Marton, D J Hounsell and N J Entwistle (Eds) *The Experience of Learning*, Edinburgh, Scottish Academic Press
- Schmidt, R A and Lee, T D (1999), *Motor Control and Learning: A Behavioral Emphasis*, 3rd edn, Champaign: Human Kinetics.
- Schultz, D P and Schultz, S E (1987) *A History of Modern Psychology*. Harcourt Brace Jovanovich Publications.

- Scott, P (1995) *The Meanings of Mass Higher Education*, Buckingham: SRHE/OU Press
- Silver, H. and Brennan, J (1988) *A Liberal Vocationalism*, London, Methuen
- Simon, H A (1976) *Administrative behavior*. New York: Macmillan.
- Sims, H P and Gioia, D A (1986) *The thinking organization*. San Francisco, Jossey-Bass
- Singley, M K and Anderson, J R (1989) *The transfer of cognitive skill*. London: Harvard University Press.
- Skinner, B F (1938) *The Behaviour of Organisms*, Appleton-Century-Crofts
- Skinner, B F (1969) *Contingencies of reinforcement: A theoretical analysis*. New York, Appleton-Century-Crofts
- Snyder, B R (1971) *The hidden curriculum*. New York, Knopf.
- Taylor, A, Sluckin, W, Davies, D R, Reason, J T, Thomson, R and Colman, A M (1982) *Introducing Psychology*, 2nd Edition, Penguin.
- Thorndike, E L (1932) *The Fundamentals of Learning*. Teachers College Bureau of Publications
- Tinbergen, N (1989) *The study of instinct*, Oxford, Clarendon
- Vroom, V (1964) *Work and motivation*. New York, Wiley.
- Watson, J B (1914) *Behavior: An Introduction to Comparative Psychology*, Holt
- Watson, J, B (1924) *Behaviorism*, New Brunswick, NJ, Transaction
- Watson, J B (1930) *Behaviorism*, University of Chicago Press, 2nd edition
- Weil, S W and McGill, I (Eds) (1989) *Making Sense of Experiential Learning*, the Society for Research into Higher Education and Open University Press,
- Wickens, D D (1972) Characteristics of word encoding, in A W Melton and E Martin (Eds) *Coding processes in human memory*, New York, Winston.
- Woodsworth, R S, and Schlosberg, H (1954) *Experimental Psychology*, Holt

Journal articles cited in *all references* list

- Aiello, J R and Kolb, K J (1995) Electronic performance monitoring and social context: Impact on productivity and stress. *Journal of Applied Psychology*, 80, 339-353
- Au Yeung, Y N, Lai, C, C, Ho, W F, Sivan, A, Gow, L and Ledesma, J, (1993) Attitudes towards Industrial Training in the BEng Course in Building Services Engineering at Hong Kong Polytechnic, *Studies in Higher Education*, 18 (2) 205-226

- Avakian, A (1974) Writing a learning contract, *Current Issues in Higher Education* 29, 50-56
- Bailey, D, (2004) The contribution of work-based supervision to interprofessional learning on a masters programme in Community Mental Health, *Active Learning in Higher Education*, 5 (3) 263-278
- Baldwin, J M (1896) A new factor in evolution, *American Naturalist*, 30, 441-451.
- Barrick M R and Mount M K (1991) The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1-26.
- Barthorpe, S and Hall, M (2000) A Collaborative Approach to Placement Preparation and Career Planning for University Students: a case study. *Journal of Vocational Education and Training*, 52 (2) 165-175.
- Baumeister, R F and Leary, M R (1995) The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117 (3) 497-529
- Benett, Y (1989) The assessment of supervised work experience (SWE): a theoretical perspective. *Vocational Aspect of Education*. 41 (109) 53-64.
- Benson, A and Blackman, D (2003) Can Research Methods Ever Be Interesting? *Active Learning in Higher Education*, 4 (1) 39-55
- Billett, S (1998) Transfer and Social Practice, *Australian and New Zealand Journal of Vocational Education Research*, 6 (1) 1-25
- Birdwell, J (1972) Behavioral Contracts in Reading and Study, *Reading Improvement*, 8, 92-94
- Bourner, T and Ellerker, M (1993) Sandwich placements: improving the learning experience: part 1, *Education and Training*, 35, (7) 3-7.
- Boyd, E, Knox , H and Struthers, J (2003) Work-based learning, theory and practice: a case study of Scottish SMEs, *Industry and Higher Education*, June, 163-178
- Bowers-Brown, Tamsin and Harvey, Lee, (2004), Are there too many graduates in the UK? A literature review and an analysis of graduate employability, *Industry and Higher Education* 18 (4) 243-254
- Broadbent, D (1987) Structures and strategies: where are we now? *Psychological Research*, 49, 73-79
- Burke, V, Jones, I and Doherty, D (2005) Analysing student perceptions of transferable skills via undergraduate degree programmes *Active Learning in Higher Education*, 6 (2) 132-144

- Busby, G (2003) Tourism Degree Internships: a longitudinal study. *Journal of Vocational Education and Training* 55 (3) 319 - 334
- Cook, S H (1999) The self in self-awareness, *Journal of Advanced Nursing*, 29 (6) 1292-1300
- Cornford, I R (1991) Microteaching Skill Generalization and Transfer: training preservice teachers in introductory lesson skills, *Teaching and Teacher Education*, 7, 25-56.
- Cornford, Ian, R (2002) Two Models for Promoting Transfer: a comparison and critical analysis. *Journal of Vocational Education and Training*, 54 (1) 85-102
- Cornford, I R and Beven, F A (1999) Workplace Learning: differential learning needs of novice and more experienced workers, *Australian and New Zealand Journal of Vocational Education Research*, 7 (2) 25-54.
- Cox, B (1997) The Rediscovery of the Active Learner in Adaptive Contexts: a developmental-historical analysis of the transfer of training, *Educational Psychologist*, 32, 41-55.
- Craik, F I M, and Lockhart, R S (1972) CHARM is not enough: Comments on Eich's model of cued recall. *Psychological Review*, 93, 360-364
- Craik, F I M and Tulving, E (1975) Depth of processing and the retention of words of episodic memory. *Journal of Experimental Psychology: General*, 104, 268-294
- Danks, D J and King, I W (1986) The assessment of supervised work experience, *Business Education*, 7 (2) 22-28.
- Daresh, J C (1990) Learning by doing: research on the Educational Administration Placement, *Journal of Educational Administration*, 28 (2) 34-47.
- Doane, S M, Sohn, Y W, Alderton, D L and Pellegrino, J W (1996). Acquisition and transfer of skilled performance: Are visual discrimination skills stimulus-specific? *Journal of Experimental Psychology: Human Perception and Performance*, 22 1218-1248.
- Ellis, H C, Thomas, R L, and Rodriguez, I A (1984) Emotional mood states and memory: elaborative encoding, semantic processing, and cognitive effort. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 10, 470-482
- Entwistle, Noel and Smith, Colin (2002) Personal understanding and target understanding: Mapping influences on the outcomes of learning. *British Journal of Educational Psychology* 72, 321-342

- Eraut, Michael (2000) Non-formal learning and tacit knowledge in professional work *British Journal of Educational Psychology* 70 (1) 113–136
- Felder, R M and Rebecca Brent, R (1996) Navigating the Bumpy Road to Student-Centered Instruction *College Teaching*, 44, 43-47
- Ferrari, Michel (1999) Influence of Expertise on the Intentional Transfer of Motor Skill. *Journal of Motor Behavior*, 31 (1) 79-.86
- Fransson, A (1977) On qualitative differences in learning: effects of motivation and test anxiety on process and outcome. *British Journal of Educational Psychology*, 47, 244–57.
- Gibbs, P T (2000) Isn't Higher Education Employability? *Journal of Vocational Education and Training*, 52 (4) 559-571
- Glaser, R (1990) The emergence of learning theory within instructional research, *American Psychologist*, 45, 29-39
- Hadis, Benjamin F (2005) Gauging the impact of study abroad: how to overcome the limitations of a single-cell design *Assessment & Evaluation in Higher Education* 30 (1) 3-19
- Haddock, T T (1967) Individualized Instruction through Student Contracts, *Arizona Teacher*, 55, 10– 11
- Heller, B R and Heinemann, H N (1987) The Impact of Structured and Nonstructured Work Experiences on College Students' Attitudes, Values, and Academic Performance. *Journal of Cooperative Education*; 23 (3) 19-32
- Henderson, Emma, Hogan, Helen, Grant, Andy and Berlin, Anita (2003) Conflict and coping strategies: a qualitative study of student attitudes to significant event analysis. *Medical Education*, 37 (5) 438- 447
- Herold, David M, Davis, Walter, Fedor, Donald B, and Parsons, Charles K (2002) Dispositional Influences On Transfer Of Learning In Multistage Training Programs. *Personnel Psychology*, 55 (4) 851-870.
- Holyoak, K J and Thagard, P (1997) The analogical mind. *American Psychologist*, 52, 35-44.
- Hopper, E and Osborn, M (1975) *Adult Students: Education, Selection and Social Control*, London, Frances Pinter.
- Jackson, S (1995) Work-based learning for academic credit, *Journal of Geography in Higher Education*. 19 (2) 217-222.

- Jacobs, P A and Newstead, S E, (2000) The nature and development of student motivation, *British Journal of Educational Psychology*, **70**, 243 - 254
- Kimble, Gregory A (1962) Classical conditioning and the problem of awareness. *Journal of Personality*, **30** (2) 27-46
- Kontogiannis, Tom and Shepherd, Andrew (1999) Training Conditions and Strategic Aspects of Skill Transfer in a Simulated Process Control Task. *Human-Computer Interaction*, **14** (4B) 355-94
- Latham, G P, and Saari, L M (1979) Importance of supporting relationships in goal-setting. *Journal of Applied Psychology*, **64**, 151-156.
- Locke, E, A, Shaw, K N, Saari, L, and Latham, G P (1981) Goal setting and task performance. *Psychological Bulletin*, **90**, 125 - 152
- Lyons, B R (1996) Empirical relevance of efficient contract theory: inter-firm contracts, *Oxford Review of Economic Policy*, **12** :27-52
- Macmillan, J and Mclean, M, J (2005) Making first-year tutorials count: Operationalizing the assessment-learning connection, *Active Learning in Higher Education*, **6** (2) 94–105
- Miller, R B (1967) Task taxonomy: Science or technology, *Ergonomics*, **10**, 167-176
- Parilla, P F and Hesser, G W (1998) Internships and the sociological perspective: Applying principles of experiential learning, *Teaching Sociology*, **26** (4) 310-329.
- Pea, R D (1987) Socializing the Knowledge Transfer Problem, *International Journal of Educational Research*, **11**, 639-659.
- Pedler, M, Burgoyne, J and Brook, C (2005) What has action learning learned to become? *Action Learning: Research and Practice*, **2** (1) 49-68
- Pennington, N, Nicolich, R and Rahm, J (1995) Transfer of training between cognitive subskills: Is knowledge use specific? *Cognitive Psychology*, **28**, 175-224.
- Perkins, D N and Salomon, G (1989) Are Cognitive Skills Context Bound? *Educational Researcher*, **18** (1) 16-25.
- Polczynski, James J, and Shirland, I E (1977) Expectancy Theory and Contract Grading Combined as an Effective Motivational Force for College Students. *Journal of Educational Research*; **70** (5) 238-241
- Robinson, G (2005) Action learning: developing critical competencies for knowledge era workers, *Action Learning: Research and Practice*, **2** (1) 79-88

- Rozin P and Shenker, J (1989) Liking oral cold and hot irritant sensations: Specificity to type of irritant and locus of stimulation. *Chemical Senses* **14** (6) 771-779
- Ryan, G, Toohey, S and Hughes, C (1996) The purpose, value and structure of the placement in higher education: a literature review, *Higher Education*, **31** (3) 355-377
- Salomon, G and Perkins, D N (1987) Transfer of cognitive skills from programming: When and How? *Journal of Educational Computing Research* **3**, 149 –169.
- Salomon, G and Perkins, D N (1989) Rocky roads to transfer: Rethinking mechanisms of a neglected phenomenon, *Educational Psychologist* **24**, 113-142.
- Schmidt, R A and Bjork, R A (1992). New conceptualizations of practice: Common principles in three paradigms suggest new concepts for training. *Psychological Science*, **3**, 207-217.
- Shanteau, J and Harrison, P (1991) The perceived strength of an implied contract: Can it withstand financial temptation? *Organizational Behavior and Human Decision Processes*, **49**, 1-21
- Shiffrin, R, and Schneider, W (1977) Controlled and automatic human information processing: Perceptual learning, automatic attending, and a general theory. *Psychological Review*, **84**, 127-190
- Skinner, B F (1950) Are theories of learning necessary? *Psychology Review*, **57**, 193-216
- Skinner, B F (1954) the science of learning and the art of teaching, *Harvard Educational Review*, **24**, 88-97
- Sternberg, R (1998) Metacognition, Abilities and Developing Expertise: What makes an expert student? *Instructional Science*, **26**, 127-140
- Stokes, T F and Baer, D (1977) The Implicit Technology of Generalization, *Journal of Applied Behavior Analysis*, **10**, 349-367.
- Teichler, Ulrich, (2004) Temporary Study Abroad: the life of ERASMUS students, *European Journal of Education*, **39** (4) 396-408
- Turney, C (1988) The Practicum Curriculum. *Journal of Teaching Practice*, **8** (1) 3-14
- Weigelt, C, Williams, A. M, Wingrove, T and Scott, M A (2000) Transfer and motor skill learning in association football. *Ergonomics*, **43** (10) 1698 –1708.
- Weiner, B (1993) On sin versus sickness: A theory of perceived responsibility and social motivation. *American Psychologist*, **48** (9) 957-965

Yelon, S (1992) M.A.S.S.: a model for producing transfer, *Performance Improvement Quarterly*, 5 (2) 13-23.

Zuckerman, M (1984) Sensation seeking: A comparative approach to a human approach. *The Behavioural and Brain Sciences*, 7, 413-471

Research, seminar and conference (proceedings) papers

Brennan, J (2004) *Things we know and don't know about graduate employment*, Employability Advisory Group, Seminar on 9 December 2004, Centre for Higher Education Research and Information, Open University.

Brennan, J and Little, B (1996) *A Review of Work Based Learning in Higher Education*, Quality Support Centre, London, DfEE.

Chiang, Linda H (1998) *Enhancing Metacognitive Skills through Learning Contracts*. Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (Chicago, IL, October 14-17, 1998).

Duignan, J, Lush, D, and Gomez, S (2004). *Undergraduate work placement and academic performance: now you see it, now you don't. A comparative study of biosciences and business placement programmes at two separate universities*. Paper delivered at ASET Conference, 7 – 9 September, Fitzwilliam College, Cambridge

Hager, Paul (2003) *Current Theories Of Workplace Learning: A Critical Assessment*, Paper presented at the 5th International Conference, JNET, University of Greenwich, London, 16-18 July, 2003

Harris, Jimmy Carl (1994) *The Effectiveness of Student Learning Contracts in a Public Community College History Course*. Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Nashville, TN, November 9-11).

Harvey, L, Geall, V and Moon, S (1998) *Work experience: expanding opportunities for undergraduates*, Birmingham: Centre for Research into Quality, University of Central England in Birmingham.

Harvey, L, Locke, W and Moray A (2004) *Enhancing employability, recognising diversity: making links between education and the world of work*, Universities UK, www.UniversitiesUK.ac.uk/employability accessed 28 April 2004

- Joshi, Urmi, (2003) *Foundation Degrees*. Paper presented at 5th international conference, JVET, University of Greenwich, London, 16 – 18 July, 2003
- Knight, P T and Yorke, M, (2002) *Graduate employability*
<http://www.open.ac.uk/vqportal/SkillsPlus/documents/PubPaper2.pdf> accessed July 14, 2004
- Levy, M, Oates, T, Hunt, M and Dobson, F (1989) *A Guide to WBL, terms: definitions and commentary on terms for WBL in vocational education and training*. FE Staff College, WBL project
- Morgan, A, Jones, N, and Fitzgibbon, K (2003) *Critical reflections on the development of a Foundation degree*, paper presented at 5th international conference, JVET, University of Greenwich, London, 16 –18 July, 2003
- Osborne, M, Yule, B, Carmichael M and Dockerell, R (1993) *Accreditation of in-house courses and Accreditation of prior experiential learning – some case studies*. Scottish Higher Education Employers Collaboration Joint Research and Development project, University of Stirling and Glasgow Caledonian University.
- Policy Works / Scottish Foundation Council (2003) *Higher Education: Higher Ambitions? Graduate employability in Scotland*
- Richards, Boyd (1984) *Availability of Prior Knowledge and Its Effect on Transfer of Learning*. Paper presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, January 20-24, 1984).
- Taylor, E (1983) *Orientations to study: A longitudinal interview investigation of students in two human studies degree courses at Surrey University*, unpublished PhD thesis, Guildford, University of Surrey.

Government and quasi-governmental publications and reports

- Association for Sandwich Education and Training (ASET) (1999)
<http://www.asetonline.org/> accessed 14 July 2004
- Blunkett, David, (Rt Hon., HM Education and Employment Secretary) Speech given at University of Greenwich, 2000 (15 February 2000)
- Brennan, J (2004) *Things we know and don't know about graduate employment*, Employability Advisory Group, Seminar on 9 December 2004, Centre for Higher Education Research and Information, Open University.

- Brennan, J and Little, B (1996) *A Review of Work Based Learning in Higher Education*, Quality Support Centre, London, DfEE.
- British Journal of Work Experience and Work Based Learning, *Work Experience for undergraduates: A Comprehensive Guide*, NCWE
- Committee of Vice-Chancellors and Principals (1998) *Skills Development in Higher Education*, London, CVCP.
- Committee of Vice-Chancellors and Principals (1999) *CVCP calls on employers to boost work experience*, London, CVCP
- Crick Report (1964) National Advisory Council on Education for Industry and Commerce, *A Higher Award in Business Studies*, HMSO
- Critical Thinking – Policy Works – Scottish Foundation Council, 2003, *Higher Education: Higher Ambitions? Graduate employability in Scotland*
- Dearing Review (1997) The National Committee of Inquiry into Higher Education: *Higher Education for the 21st Century*, London, HMSO
- The Government's Response to *Higher Education in the Learning Society* - The Report of the National Committee of Inquiry into Higher Education, chaired by Sir Ron (now Lord) Dearing. HMSO, 1998
- Harvey, L, Locke, W and Moray A (2004) *Enhancing employability, recognising diversity: making links between education and the world of work*, Universities UK, www.UniversitiesUK.ac.uk/employability accessed 2 April 2004
- HESA, (2004), Personal communication (e-mail) in response to candidate's inquiry, dated 1 September, 2004
- Higher Education Quality Council (1996) *What are Graduates? Clarifying the Attributes of 'Graduateness'*, Discussion Paper. HEQC: Quality Enhancement Group.
- House of Commons Education and Skills Committee (2003) *The Future Of Higher Education*, July 2003 HC425-1, 2003
- Lambert Review of Business-University Collaboration, HMSO, December 2003
- Levy, M, Oates, T, Hunt, M and Dobson, F (1989) *A Guide to WBL, terms: definitions and commentary on terms for WBL in vocational education and training*. FE Staff College, WBL project

National Council for Work Experience (2000) *The placement tutor's handbook*, London, DfEE.

National Council for Work Experience, Work Experience for undergraduates: A Comprehensive Guide, (undated, no author given) *British Journal of Work Experience and Work Based Learning*, Retrieved from <http://www.prospects.ac.uk/workexperience/index.htm>(www.work-experience.org, accessed 16 February 2003.

Osborne, M, Yule, B, Carmichael M and Dockerell, R (1993) *Accreditation of in-house courses and Accreditation of prior experiential learning – some case studies*. Scottish Higher Education Employers Collaboration Joint Research and Development project, University of Stirling and Glasgow Caledonian University.

Policy Works / Scottish Foundation Council, (2003) *Higher Education: Higher Ambitions? Graduate employability in Scotland*

The Government's Response to *Higher Education in the Learning Society* (1998) *The Report of the National Committee of Inquiry into Higher Education*, chaired by Sir Ron (now Lord) Dearing, London, HMSO

Web-sourced material

Association for Sandwich Education and Training (ASET) (1999) <http://www.asetonline.org/> accessed 14 July 2004

CVCP calls on employers to boost work experience

<http://www.universitiesuk.ac.uk/mediareleases/show.asp> accessed 15 April, 2004

Cosmides, Leda and Tooby, John (1997) *Evolutionary Psychology: A Primer*, Center for Evolutionary Psychology, University of California, Santa Barbara, <http://www.psych.ucsb.edu/research/cep/primer.html>, accessed 14 May 2003.

Harvey, L, Locke, W and Moray A (2004) *Enhancing employability, recognising diversity: making links between education and the world of work*, Universities UK www.UniversitiesUK.ac.uk/employability accessed 28 April, 2004

Knight and Yorke, 2002, *Graduate employability* <http://www.open.ac.uk/vqportal/Skills-Plus/documents/PubPaper2.pdf> accessed July, 2004

National Council for Work Experience, Work Experience for undergraduates: A Comprehensive Guide, (undated, no author given) *British Journal of Work Experience and Work Based Learning*, Retrieved from <http://www.prospects.ac.uk/workexperience/index.htm>(www.work-experience.org, accessed 16 February 2003.

NCWE *Code of Good Practice*

http://www.prospects.ac.uk/cms/ShowPage/Home_page/Codes_of_good_practice, accessed 28 Oct 2002

Race, P, How Does Learning Happen Best? *Deliberations*

<http://www.lgu.ac.uk/deliberations/eff.learning/happen.html>, accessed 12 July 2003

Shell Technology Enterprise Programme (STEP) <http://www.step.org.uk/> accessed 14 July 2004

The Institution of Electrical Engineers, <http://www.iee.org/TheIEE/about.cfm>, accessed 3 January, 2005

What does the university gain from work experience?

http://www.uwic.ac.uk/uwicnet/studserv/workplacement/what_does_the_university_gain_from_work_experience.htm accessed July 14, 2004

Why is work experience important? <http://workexperience.ulst.ac.uk/staff/value.phtml> accessed 14 July 2004

Work Based Learning programme <http://www.sems.surrey.ac.uk/SoM/WBL/BScPD.asp> accessed 14 July 2004

World Association for Cooperative Education (WACE) <http://www.waceinc.org> accessed 14 July 2004

<http://www.statistics.gov.uk/STATBASE/ssdataset.asp> accessed 19 September, 2004

Software used:

Microsoft® Word 2000

Microsoft® Excel

WinSTAT® for Excel

Snap4 (version 4.1)